The Veterinary Record.

FOUNDED BY WILLIAM HUNTING, F.R.C.V.S., 1888.

NO. 52. DECEMBER 27, 1930. VOL. 10.

A Visit to Some of the Veterinary Colleges and Veterinary Research Institutes of the United Socialist Soviet Republic.*

By Frederick Hobday, C.M.G., F.R.C.V.S., F.R.S.E.
PRINCIPAL AND DEAN OF THE ROYAL VETERINARY COLLEGE, LONDON.

As some of you are aware, it has been my privilege, as Editor of the *Veterinary Journal*, to organise a series of trips by which a number of British colleagues have visited various Veterinary Colleges, Research Institutes, Municipal Abattoirs, and other concerns of veterinary interest on the Continent; and this year an exceptional opportunity afforded itself, through the courtesy of the three Soviet Delegates who responded to the invitation issued to the Government Departmental Veterinary Officials of all countries, to obtain some knowledge at first hand of what was being done to grapple with animal diseases by the Veterinary Authorities of the newly-formed Union of Socialist Soviet Republics, which was formerly known as Russia. In the Russian language this is termed "Soyus Sotsialisticheskekh Sovietskikh Respublik" and abbreviated as S.S.S.R.

This Republic comprises one-sixth of the world's surface and its size of territory is only exceeded by the domain of one nation, that of the British Empire. This fact was impressed upon me by a remark made by one of their officials, who said: "In 30 years there will be two official languages in the world—English and Russian—as you own one-fifth of the world and we own one-sixth." It extends from the Arctic Ocean to the Pacific and has every variety of climate, with most of the varieties of animal disease indigenous to each; so that, from this, one can judge in some measure of the vastness of the task to be undertaken for the control of animal disease, especially as the number of qualified veterinarians is only approximately 6,000. I was informed that it was necessary to increase this number to 12,000 as speedily as possible.

In Russia there has been for many years a system whereby there are trained (under proper Government supervision) a second grade of veterinary assistant, the so-called Feldsher, or helper, who is allowed to do certain classes of minor veterinary work on his own initiative, but whose chief function is to assist the qualified man. I was informed that this system is still carried on and that there are about 12,000 of these men practising, especially in the country districts. It is hoped to double this number within the next few years.

In the Russia of the pre-revolution days there were four veterinary colleges, each attached to a university, and these were situated at Kharkov, Kazan, Dorpat and Warsaw. After the Revolution, only Kharkov and Kazan remained, as Warsaw is situated in Poland and went with that country when it was given independence. Dorpat went similarly with Esthonia, the name being now changed to Tartu.

The Soviet Goverment, recognising the urgent value of properly trained and equipped Veterinary Science to a country whose animal health is of such vast importance, have increased the number to fourteen, all of which are already in Session, although the buildings of all are not yet quite completed.

I saw the colleges (or veterinary institutes, as they are termed) at Leningrad and Moscow. They were not quite finished in September last, but it was hoped that they would be before December—and I think (from what I saw) the prospect of their early completion was good. Those of Erivan, Voronesh, Alma Atar (in Turkestan), Troytsk (Ural), and Samara, were to be completed this year, too; and the one the outside of whose laboratories and lecture rooms I shall show you on the epidiascope is Erivan. Others are in process of erection at Kieff, Saratov, Vieteosk, Oemsk, Novocherkassk, Viatka and Perm. Besides these teaching schools there are 24 large experimental veterinary institutes, of which I saw those of Koosminky, about 12 kilometres from Moscow, and Leningrad, the photographs of which I will show you on the epidiascope screen. The two which I saw were both well equipped, and the one at Koosminky (Moscow) had over 100 acres of land attached to it for the purpose of keeping a considerable number of horses and cattle and other animals for experimental and observational purposes. Besides these, there are 68 smaller laboratories in various out-stations, used mainly as observational posts for research work.

Helminthology was made an especial study, and Moscow possessed an institute with a staff of over 30 people, under the control of Professor Skrjabin, for this subject alone. I had the opportunity of spending several hours here, and was much impressed by the thoroughness with which every detail was studied and sketched and noted down. Professor Skrjabin was one of the Soviet delegates to the International Veterinary Congress, and Dr. Schultz, his chief assistant, another delegate.

I think, however, that after these few preliminary remarks it will be the better plan for me to relate to you in order and in more detail the main incidents connected with my trip.

As it is only recently that the Soviet Republics have encouraged visitors to their country, there has been considerable difficulty in obtaining the necessary passports and permission to travel. I myself experienced this last year and the year before, but on this occasion, through the influence of the Congress Soviet delegates, my passport

* Paper presented to the Central Division, N.V.M.A., at the Royal Veterinary College, on Thursday, December 4th, 1930.

DEPT. OF VET. MEDICINE

was all in order within a few hours and I commenced my journey, leaving Hayes Wharf about 1 o'clock on August 23rd in the Russian Steamer, Sibier (Siberia) in company with Dr. Schultz, a very charming and congenial companion, who was returning by sea. The other two, Professor Skrjabin and Dr. Nicolsky, having already departed for home *via* Berlin and Warsaw.

The ship, although not a large one, was fitted with petrol engines and was very comfortable, everything being scrupulously clean. The cabins were well arranged and the food excellent. The passengers, mostly Russians and Americans, were allowed access to every part of the ship, and at the end of the day everybody, including the sailors, who could play the piano and any other musical instrument, or sing, added his (or her) share to the evening's entertainment. There was an excellent library of books of various nationalities, including a number of English classics, to which the sailors had equal access with the passengers and of which they made excellent use. Chess appeared to be their favourite game, and some of them played a very good game.

Every Soviet ship, by law, possesses a Lenin's Room, to which the sailors retired to study or hold debates and lectures when off duty. Alcohol, although not forbidden, was not partaken of by the sailors—nor indeed was much taken by the passengers—although wine, beer or even vodka could be obtained for the asking. The chief drink was tea, and this was served *ad libitum* at every meal. Coffee could be had if preferred, but the Russians as a body preferred tea.

The cost of the journey from London to Leningrad, first-class cabin (food is the same, whichever class one travels) is only £10 10s. 0d., and if a return is taken, the two journeys cost £20. The route taken was through the Kiel Canal, and this not only added interest but shortened the voyage very considerably. This was reached on August 25th, and Leningrad about mid-day on the 28th. The voyage past Kronstadt and up the Neva was full of interest, especially as the sun was shining and some of the domes of the churches are covered with gold.

Professor Konge, the Director of the Leningrad Veterinary College (or Veterinary Institute as it is called) and Mr. Veller, the Vice-President of the Veterinary Section of the Leningrad Agricultural Department, met me at the wharf; and, as they were accompanied by an interpreter, I soon had my luggage passed through the Customs, and was driven off in a car to the Hotel Europa, where my colleagues had very kindly made all arrangements for my accommodation. Messrs. Cook and Sons do not exist in the Soviet Republic, but their place is taken by a very well-organised Government Company, known as "Intourist," who were a perfect encyclopædia of information and gave advice willingly, taking an infinity of trouble to make things clear. As with Cook's in other countries, the "Intourist" had its staff of interpreters; if one wished for a guide one had only to apply and one would be found at once.

On the following morning I visited the Experimental Veterinary Institute, controlled by Professor Poksheeshevsky and in the afternoon the Military Veterinary Institute, of which Professor Zvetkoff is in control. Both of these places were well staffed and well equipped, there being apparently no complaint in this direction. Experimental research work is being carried on at each place, Professor Pokscheeshevsky being engaged just then on some contagious diseases of sheep and Professor Zvetkoff being responsible for the manufacture of mallein.

In the evening I went to the State Theatre and Opera (formerly the Royal Mariansky Theatre) to see an Ukranian play by "Gogol," and it was interesting to see the seats filled with workmen and their wives and families—all clean and well dressed and enjoying the music to the utmost.

On the following morning I went to the Leningrad Veterinary School, where the Professor of Surgery, Professor Taracevitch, had prepared a pony for the roaring operation. The animal was narcotised with chloral and cast very skilfully on a mattress, the securing being very neatly done by lashing the legs together with leather thongs. Between 20 and 30 of the professors and students were present, but Professor Konge explained that, had the College been in session, there would have been a much bigger crowd, as there are over 600 attending the classes at this school alone.

The College was undergoing numerous repairs and additions to bring it up-to-date, but these were sufficiently advanced to give rise to a reasonable hope that the workmen would be away before Christmas.

The laboratories and class rooms were well equipped with every necessary appliance and Professor Konge informed me that the Government had allotted 8 million roubles (of which the Leningrad Institute took its share) to Veterinary Science during the ten years' scheme. About six millions had already been spent and the other two millions would be spent before the time was up.

In the afternoon I was taken to the Institute of Comparative Pathology, of which Professor Tartokofski is the Director, and here I was shown, amongst other things, a very wonderful collection of coloured drawings of pathological conditions affecting birds, fish and insects. Professor Tartokofski is recognised on the Continent as *the* authority on this branch of Veterinary Science, and it has been his patient research which has discovered the cause of numerous diseases, especially those of birds, fish and bees; in fact, it was his work which established the cause of what is known as "Bee Disease." One of his chief assets is that of the artist attached to the Institute, a man who works and paints for the love of his art; and indeed, in this instance the artist was a treasure, for his paintings were absolutely natural. Not only was he skilled with his paintbrush, but as an artist in papier-maché and wax model representations of specimens of ticks, flies, etc., for student teaching his skill would be hard to beat. This Laboratory, like those I had seen previously, was well equipped, and I heard no complaints anywhere of want of Government support in this direction.

I spent the following morning (August 30th) at the Municipal Abattoir, a large place where about 1,200 animals are killed daily, many of the cattle from Kalmuck and the Ukraine having travelled a 14 or 17 miles' journey. The cattle which I saw killed were destroyed by pithing, and those I saw done were slaughtered very expertly, a long, dagger-shaped knife being used. Adjoining the abattoir was a peptone manufactory, built specially for the convenience of being able to get the source of origin close to the manufactory.

I had a very interesting interview with Mr. Kadatski,

the President of the Veterinary Section of the Leningrad Agricultural Council, with whom, through the interpreter, an exchange of ideas took place on the animal diseases in our respective countries.

That evening I took train to Moscow, travelling all night very comfortably in a sleeper and reaching there about 10.30 a.m. Again, through the courtesy of the London delegates, I was shown many things in a short time, the first day being spent in sightseeing and visiting the Kremlin, sundry churches and museums, the Peoples' Park and other places. The former is, of course, known world-wide, but the Peoples' Park struck me with amazement, as it had hundreds of children and boys and girls playing every conceivable outdoor and athletic game. Tennis, cricket, football, croquet, ping-pong, parallel bars, and gymnastics of all kinds were in full swing, whilst there were bands of music and all kinds of amusements. Dr. Kassatkwitch, my guide, who is a member of the Government Veterinary Department, told me that every day when the weather was fit the scene was much the same, and he estimated that there was a daily average of at least 8,000 or 9,000.

It might not be out of place to mention here that in Russia the names of the days of the week, as days of the week, have been abolished—and that such words as Sunday, Monday, Tuesday, etc., do not exist. By law every worker is compelled to take a rest from his work on each fifth day and this system keeps the parks full of children

On the following day I was introduced to Dr. Balashow, the Chief of the Veterinary Sanitary Police for the whole of Russia, and Dr. Gunisberg, the President of the Veterinary Department of all Red Russia, and the Workers' President, Mr. Smernhoff. The Workers' President is elected by the men to look after their interests and has a voice in all things in which they are in any way affected.

Dr. Balashow told me that they required 12,000 veterinary surgeons this next year, if possible.

Veterinary practice of all kinds is under the control of the State and there are no private practitioners. This also pertains to the human branch of medicine.

As the streets of Moscow and Leningrad were all full of horses, I asked what was done for them if ill, and I was told in reply that, in Moscow for example, there were nine veterinary hospitals, to each of which there was attached a number of veterinary surgeons so arranged that there was always someone on duty. Cases incapable of walking to the hospitals were collected in an ambulance and any too ill to move were, of course, treated at the owner's stables. The horses of Moscow and Leningrad looked well. I must have seen literally thousands of horses and I only saw one lame one. I saw no skin trouble, no sores, and they were in excellent working condition.

After my interview with the President, I was taken to see the Chief Veterinary Experimental Institute at Koosminky, of which Professor E. A. Schemiot-Polochansky is the Director. Koosminky stands in something the same relation to Russia as the Ministry of Agriculture Laboratory at Weybridge does to England, but it has the advantage of standing in its own grounds of about 120 acres. It was originally a large country residence and grounds, and has now been converted into well-equipped laboratories for veterinary research. It is here that Professor Ivanov has done his researches into insemination and one department is devoted to Animal Physiology.

On the following day (September 2nd) I visited the Moscow Veterinary College and the Veterinary Bacteriological Institute, each again well equipped and in full work. It happened to be the opening day at the College and I had a good opportunity to see the students. There were some 600 in all and they seemed keen on their work. Many were evidently countrymen and some had palpably, by their dress, come long distances. The College is affiliated with the University and a student must matriculate (or take whatever is its equivalent) before commencing his (or her) studies. Amongst these 600 students I saw quite a good sprinkling of women.

In all the Colleges in Soviet Russia there are 6,000 veterinary students, of whom 2,400 are women. The period of study is four years, but at the end of the third year of study a student can commence to specialise if he expresses a desire to do so, and his teachers help him in this special study. Every student who passes the necessary high standard of study at school has the right to ask the State to help him to attain his ambition. After graduation (as there is no such thing as private practice) he obtains a post and works for the State.

Whilst in Moscow I also visited the Abattoir, where I was told that some 200,000 cattle were killed annually and about 120,000 pigs. The cattle were killed by pithing, as at Leningrad.

The Police Dog Kennels were also very interesting and these are under the control of an officer who is in the Army Veterinary Department. There was a large number there—in a kennel about 10 miles from Moscow—mostly Airedales, terriers, and Caucasian Sheep Dogs, the last-named being very vicious and strong, something like the English Mastiff in build.

The Institute of Helminthology is a very valuable asset to veterinary science and the distinguished Director, Dr. Skrjabin, was a Congress Delegate, as also was his no less hard working colleague, Dr. Schultz. They have eight people who do nothing but prepare the specimens and sketch them. Altogether, they are stated to have some 100,000 helminthological specimens, collected from all parts of Russia. This Institute is stated to be the only one of its kind.

On the following day I left Moscow for Leningrad and thence, on the day after, through Finland and Sweden (through the Gotenburg Canal, back to England—back to the old College, dilapidated and tumbledown beyond repair—the Royal Veterinary College of England—the Mother College of all the English-speaking colleges in the world—and after seeing what Soviet Russia has done for its veterinary profession I could not help making a comparison. Fourteen well-equipped veterinary colleges, 24 research institutes, and 68 other laboratories—all staffed, equipped, and maintained by the State—and in this, the self-styled most animal-loving country of the world, "quacks" flourish and thrive and have thousands of pounds in legacies left to them by misguided donors, whilst the veterinary colleges, the places where more is done to alleviate animal disease and pain than anywhere else in the world, literally struggle and almost starve. Why is it that we have this anomaly?

Discussion.

Time did not allow, unfortunately, of more discussion of the foregoing paper than was contributed by Dr. Henry Fox, M.R.C.V.S., Second Veterinary Officer of the Imperial Bureau of Animal Health, who is also a graduate Kharkov University.

Dr. Fox said :—

I was honoured by being asked to open the discussion on Principal F. T. G. Hobday's most excellent paper. I do not feel equal to my task—somewhat hurriedly imposed upon me. The subject is so vast and the materials available are so voluminous that it would have required a longer notice o prepare a comprehensive discourse on this theme. Therefore I feel constrained to limit my remarks to supplementing Professor Hobday's data by a few facts and figures which I propose to quote freely from several official Soviet publications and professional journals.

I must say at the outset that Professor Hobday recorded with fairness and evident exactitude the impressions of his Russian tour. It is common knowledge that the British general public is in ignorance of the true state of affairs in the U.S.S.R. They are being stuffed with the trash published in the Press of all shades of political opinion. It is remarkable that our esteemed colleague, not speaking the language of the country and having never been there before, could so clearly depict in his paper and reflect with mirror-like accuracy the enthusiasm and unbounded belief in a bright future—sentiments so characteristic of Soviet Russia to-day and pervading every avenue of activity in that country. Principal Hobday struck a true note in his paper and that which makes it most acceptable is its sincerity. Without faith, without enthusiasm, our confrères in the U.S.S.R. would not be able to carry on in face of the economic difficulties which beset that country now.

Only the skeleton of a magnificent pre-revolutionary veterinary organisation was inherited by the Soviet Government after the revolution of November, 1917. The veterinary profession, science and education passed through many vicissitudes during the years when the country was in the throes of civil war, foreign invasion, intervention, and famine. Only since 1923 have things begun to improve.

The preliminary educational standard required of intending veterinary students was always very high in Russia, being equal to University Matriculation Examinations in this country. Consequently, the class of men turned out by veterinary institutes in Russia was of a superior type, as proved by the magnificent research work done in the domain of veterinary science and zootechnic by such men as Professor Yakimoff, Professor Vladimroff, Professor D. J. Konev, Professor A. Dedulin, Professor Mari, Professor M. T. Ivanoff, Professor Michin, Borovsky, Belitzer, Professor K. J. Skrjabin, and others.

Veterinary education in the Soviet Union is not yet resting on such a solid basis as was the case before the War, because schools of second grade excluded from their syllabus many subjects which were taught in old " gymnasia," " seminaria " and " real schools." On the other hand, higher education is available mainly to the children of parents of " proletarian origin " who are members of the " League of Communist Youth," or candidates of the Communist party. There is a sprinkling of children of Soviet employees and civil servants, the boys and girls of former privileged classes having practically no chance to study. Most of the " privileged " students hold Government scholarships, getting some money, clothing and even food during the course of their training.

Veterinary education in the Soviet Union is fostered now according to the so-called " five year plan " of economic reconstruction and industrialisation. One can understand this idea as applicable to manufacturing and agricultural industries and various trades, but one wonders how far the methods of mass production are suitable for turning out skilled professional men. A judicious scepticism towards this scheme is natural and healthy. We all know that the education and the creation of a scientifically-trained professional man is necessarily a slow evolutionary process. Training alone is not sufficient. Success depends largely on the quality of the human material available; young people must have a natural inclination for study and research; they must be imbued with enthusiasm to carry them safely through the lean years of college life; they must be taught the code of professional honour; they must absorb the glorious professional tradition; and last but not the least, there must be some substantial material reward upon reaching their goal.

What is the remuneration that the organs of local governments offered to qualified veterinarians and assistants [feldshers]? I shall quote at random from the column " Demand and offer of labour " of the leading Soviet veterinary periodical, *Vestnik Sovremennoy Veterinarii*. They vary from 110 to 385 roubles per month for a qualified veterinary surgeon and scientist, and from 55 to 95 roubles for a feldsher. These fees, expressed in sterling at par [Rbl. 9·45 per £1] represent the sums of £11 11s. to £38 in the first instance, and £5 5s. to £9 9s. in the second instance. Taking into consideration, however, the unprecedented rise in the prices of various commodities, which, according to the admission of the Soviet economist papers, decreases the purchasing power of the rouble [or chervonetz] to about 25 per cent. of its face value, we shall arrive at figures which would appear incredibly low to anyone here present, and certainly imply an extraordinarily low standard of life intolerable to the British mind. I should imagine that other professions are no better off, but this fact does not vitiate the argument advanced that veterinarians are wretchedly paid in the U.S.S.R. now. Potentially the country is very rich, but to-day it is undeveloped and very poor.

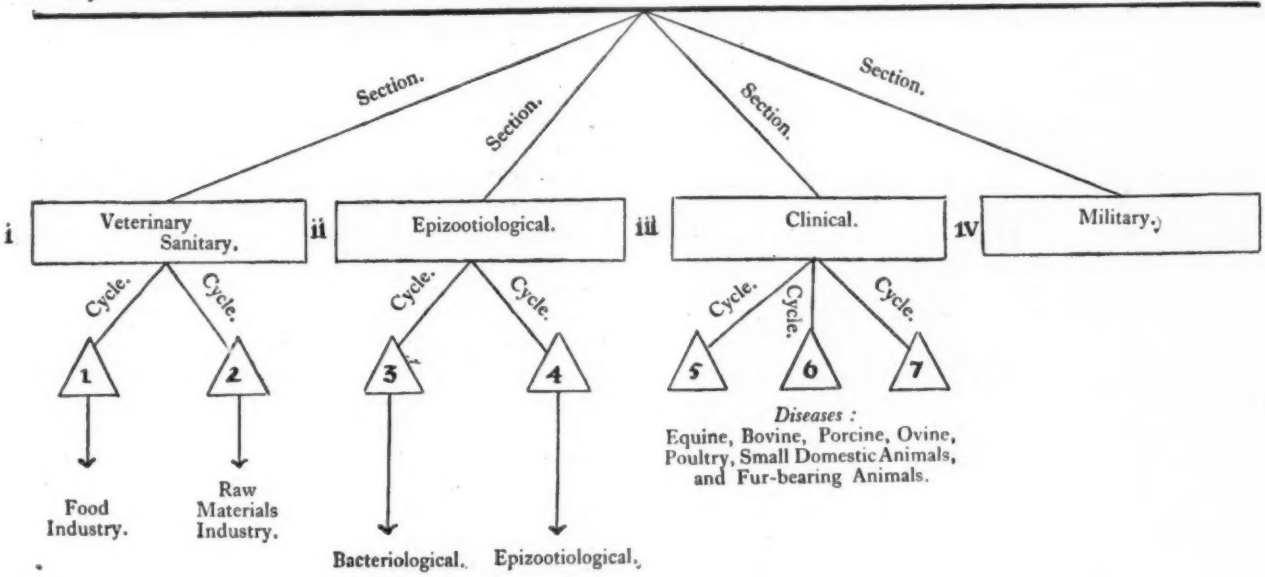
There is a need for more qualified men, experts in various branches of veterinary science, but the State has no time and no money to spend on post-graduate training. In order to expedite the course of training of a requisite number of specialists, instead of affording facilities for post-graduate training as practised in this and other civilised countries, Dr. J. A. Troitzky [see *Vestnik Sovremennoy Veterinarii*, No. 6, March, 1930, p. 158-161] discusses a projected reform of the veterinary faculty of the Moscow Zootechnical Institute. The diagram shows clearly the idea of this scheme. Specialisation would begin from the fifth semestre [third year of training] the total duration of the course being seven semestres, and the study in cycles beginning at the seventh semestre (half-year). The underlying idea is to turn out, after 3½ years of training, not a veterinarian-encyclopædist [universalist] but a trained narrow-specialist whose services can be immediately utilised by various branches of national economy without a preliminary lengthy post-graduate study.

No doubt the plan is admirably suited for the present needs of the U.S.S.R., *i.e.*, to turn out in the shortest possible time the greatest number of specialists, but whether this scheme will make for quality is another question. Is it not the very best type of student that will suffer from mental indigestion after 3½ years of intensive scientific cramming? One can produce by this method a good class of table poultry, but not the best class of professional man. The future will decide if Soviet methods will have to be emulated by other countries.

Magnificent pioneer research work was done in Russia and is being done there now. Suffice it to mention only the work of Professor K. J. Skrjabin and his school in the domain of helminthology. However, the task of keeping the torch of science alight is entrusted to-day to the members of " old-guard," who received their schooling in the old pre-revolutionary, leisurely, " inefficient " days of " universalist " training. Thirteen years after social revolution we have not heard of any men of outstanding ability rising from the crowd of State-kept and fed, new generation of veterinarians.

What are the veterinary achievements in the U.S.S.R.? I have before me a booklet issued by the Veterinary Board of the People's Commissariat of Agriculture [Narkomzem] of the R.S.F.S.R., Russia proper. This is entitled " Scheduled plan of veterinary measures in R.S.F.S.R. for the year 1929-30 [from October 1st, 1929, to September

PROJECTED VETERINARY FACULTY OF THE MOSCOW ZOOTECHNICAL INSTITUTE.



30th, 1930]. The measures contemplated are reviewed from the angle of the renowned "five year plan." The veterinary sanitary condition of the country and the degree of realisability of the future plans are based upon official data for the year 1927-28. In that year there were 2,325,400 head affected by contagious diseases, of which 404,200 head had died or were slaughtered. How prevalent are some of the contagious diseases? The following figures, quoted from the above report, give an answer to this question :—

	1927-1928.
Rinderpest	327
Pleuro-pneumonia of cattle...	8,938
Tuberculosis (bovine)—No figures are available [Sic!]	
Glanders	6,964
Swine fever	41,243
Swine septicæmia	5,054
Swine erysipelas	71,850
Sheep pox	174,394
Sheep scab	30,477
Piroplasmosis (equine) ...	25,132
Piroplasmosis (bovine) ...	34,653
Foot-and-mouth disease ...	1,170,933
Anthrax	29,437
Rabies	26,317
Number of human beings bitten and treated at Pasteur Institutes	59,749!

In veterinary hospitals were treated 13,347,003 animals during 1927/1928, which represented in % of total number :—

40·5% horses.
9·4% cattle.
1·0% sheep and goats.
5·2% pigs.

Total animal population of the R.S.F.S.R. during 1927/1928 was 133,331,300 head, of which :

18,685,700 horses,
37,309,200 cattle,
63,528,100 sheep,
1,832,600 goats,
11,857,300 pigs,
89,800 camels,
34,300 other animals.

Poultry, dogs and cats, excluded.

This number of animals was spread over the territory of 11,806,000 square kilometres in the herds of nomads and 307,300 towns, cities, villages, farms, etc. Veterinary personnel had to supervise the work at more than 40,000 various establishments, and to carry out this task there were only 3,537 veterinary surgeons and 4,960 veterinary feldshers.

In 4,176 rural areas allocated to veterinary surgeons and feldshers, there were only 1,999 veterinary surgeons employed; only 895 districts had fully-equipped veterinary hospitals, and 1,276 had out-patients' [ambulatory] clinics. The area allocated to each veterinary surgeon was on the average 2,827 square kilometres, with 30 kilometres radius. Total credits voted by State and local budgets were equal to 19,481,300 roubles [about £2,000,000 at par and about £500,000 actual value]. Owing to such a discrepancy between real needs and the measures carried out, colossal losses were incurred by the country. The mortality of foals and calves is computed to be five per cent. of the total herd, and that for sheep and pigs is ten per cent. The total value of animals lost through contagious and other diseases is computed to be equal to 281,206,000 roubles [£29,000,000 nominal, or £7,250,000 actual]. To this figure should be added other losses incidental to the diminution of value of recovered animals, decrease of lactation, fertility, rejected carcasses, etc., which increases a total animal loss to £32,000,000 nominal, representing 9·9% of all receipts from animal husbandry and 32·2% of value of saleable animal products.

These figures are appalling and they speak for themselves.

Many contagious diseases which are eradicated in all Western European countries are rife in R.S.F.S.R. and in the U.S.S.R., because we have no reason to surmise that conditions in other parts of the Federal Union are any better.

Now it is obvious that so-called "enormous achievements" of the Soviet, as judged by our own standards are nothing else but a slow stage of development in the superhuman task of eradicating, preventing and treating animal diseases in a vast territory. The development of recent years was but a measure of self-defence and is not commensurate with the actual need as plainly stated in the report before quoted.

The credits voted by central and local government bodies are a mere pittance and are thoroughly inadequate to cope with the problems to be faced.

Each country has her own difficulties and those of the Soviet Union's are of such degree that it might require

The Veterinary Profession in Ireland.

Provisions of the New Bill.

"The Veterinary Surgeons Bill, introduced by President Cosgrave in the Dail, sets up a Veterinary Council in the Irish Free State which will take over the regulation and control of veterinary surgeons and regulate the practice of veterinary medicine in the Irish Free State," says the *Irish Times* of December 11th.

"The measure follows an agreement between the Governments of Great Britain and Northern Ireland and the Irish Free State—similar to that which was arrived at in connection with the legislation for the control of the medical profession. This agreement set out that a Veterinary Council shall be set up in the Irish Free State, and that a register of veterinary surgeons shall be established, and that the Council shall always include four members who will be members of the Council of the Royal College of Veterinary Surgeons.

"The bill details the forms to be observed at elections of members of the Council, the terms of office of such elected members and the filling of casual vacancies on the Council.

"The Oireachtas will make a grant of £150 towards the expenses of the Council.

"The Council shall operate under the supervision of the Minister for Agriculture, and, if at any time the Minister considers that the Council has failed in its duties and continues so to fail, he may take upon himself the duties of the Council.

"The amount of the registration fee is fixed at two guineas, and the annual fee is also two guineas. The Council shall make an annual payment to the Royal College of Veterinary Surgeons of one guinea in respect of every person whose name appears in the register."

Promotion to Established Civil Service Posts.

As a result of negotiations in the Joint General Whitley Council the official side has agreed to modify the common practice of deducting ten per cent. from the salary of an unestablished civil servant upon his appointment to an established post. In cases where it is considered appropriate to take account of the pension and other privileges which follow from establishment the officer will "mark time" on his existing salary until his accrued increments equal the amount of the reduction which would under former practice have been imposed. The new arrangement is in accordance with precedents set by decisions of the Industrial Court in analogous cases. The concession is to apply retrospectively to all who have been established since the beginning of the year.—*The Times.*

half a century before U.S.S.R. can boast of such veterinary-sanitary conditions as prevail to-day in Great Britain or in any of the British Dominions overseas. Conditions in India or in some of the British colonies in Africa are somewhat similar to the state of things veterinary in Russia to-day.

I sincerely hope that our Russian confrères will succeed in their battle, in spite of being handicapped by absence of means and requisite number of trained professional men. But it will be a slow evolutionary process. I believe I voice the sentiment of all present when I say that we admire them for the way they carry on and keep the torch of veterinary science burning, disseminating knowledge, combating ignorance and protecting and laying a solid foundation for the great animal industry in the U.S.S.R. A great future awaits them. They deserve sympathy and moral support. (Applause.)

Grass Disease and Related Conditions.*

By Oscar Stinson, M.R.C.V.S., Appleby.

It is the purpose of this paper to show that grass disease resembles post-parturient dyspepsia and milk fever in the cow, tetany in the horse, and probably lambing sickness in the sheep; that it is preventable and that indications are that it may be cured in those cases other than the peracute or acute; also to demonstrate the association of grass disease with over-stimulation of the sympathetic nervous system as suggested by Greig.

For a number of years the writer has observed grass disease from a clinical standpoint and, after eliminating several hypotheses, he has been forced to the conclusion that grass disease is analogous to post-parturient dyspepsia in the cow, that tetany in the horse is analogous to milk fever in the cow, and that grass disease is but a variation in degree of severity of tetany and also that post-parturient dyspepsia and milk fever are but variations of the syndrome.

The factors which are now discussed will indicate the causes or predisposing causes of grass disease. It is not to be presumed that it is necessary for all the causes to be in operation, but several may combine to cause the disease. In the appended tables features of the diseases under discussion are given in detail and from them it will be seen that the syndrome occurs in animals whose metabolic rate is high. Grass disease occurs chiefly in horses on a protein-rich pasture. The factors which have increased the richness of the pasture are either heavy manuring by stock or the application to the pastures of phosphatic manures, which may have given rise to more protein. Feeding linseed cake, excessive fatigue and extremes of temperature are all factors which may stimulate the production of the syndrome.

Grass disease is a new disease and therefore it is expedient that we examine some of the features of animal husbandry which have undergone a change during the last 40 years. The sheep and cattle populations have increased, and with this increase has come the congestion of many animals, *e.g.*, at lambing time. This has resulted in a rich manuring of the land. Grass disease frequently occurs in the neighbourhood of villages where this excess of manuring is commonest. Horses imitate sheep in their choice of pasturage, in their mode of feeding closely to the ground, thus they consume the richest protein diet, because the younger the grass the more protein it contains.

Manuring of pastures has undergone a marked change during the last 40 years. Formerly much lime was used on the land, but with the rise in the cost of burning and carting lime it fell suddenly into disfavour, and about 20 years ago, when grass disease first appeared, the soil became depleted of lime. Phosphatic manures have replaced lime and, speaking from an animal husbandry standpoint, fields are manured in an unbalanced manner. Grass disease frequently appears in fields which have been heavily manured either by artificial or natural means. Grass disease is primarily a disease of the North of England and Scotland, therefore it is pertinent to consider why it does

* Paper presented to the Scottish Metropolitan Division, N.V.M.A., at Edinburgh, on April 23rd, 1930. (Received for publication, November 26th.)

not occur further South. In the North the climate is harder and horses are frequently turned out to grass from a warm stable, where they have been fed upon a carbohydrate diet, to a cold pasture rich in protein. In the South, climatic conditions are less variable and feeding more equable. Grass disease occurs among horses which are permanently at pasture, but usually when they have access to young growing grass.

Having discussed briefly the predisposing causes of grass disease, any or all of which may precipitate an attack of the disease, it is of interest to conjecture their mode of operation. Cold and a rich protein diet are the chief predisposing causes of the syndrome, and these factors may be summarised in their effects as an increased metabolism, all three factors leading to stimulation of the adrenal-thyroid sympathetic system. Stimulation of this system will produce all the symptoms of the grass disease syndrome.

Larger doses of purgative are necessary in the North, and horses, when at grass, are more subject to lymphangitis in the North than in the South. No explanation of these phenomena is offered, but it is felt that they may have a bearing on the subject.

Before discussing the effect of mineral deficiency on the disease under discussion, it is well to remember that the cow has been bred to produce large amounts of milk, and when she is affected by disease she ceases to lactate; in other words, she is using the materials and energy which normally produce milk to ward off the disease. The horse has not this reserve and is consequently more acutely affected. For example, a heavy milking cow with post-parturient dyspepsia will cease to lactate and usually recover, whereas a horse with the corresponding condition, *i.e.*, grass disease, will not have this recuperative faculty.

Certain mineral deficiencies have a bearing upon the grass disease syndrome. In some localities where pica, osteomalacia and rickets occur, the type of land is considered to be calcium rich and grass poor; we believe these localities are not associated with the disease, but we have seen grass disease and tetany in horses brought from these pastures to those containing little calcium and good grass. These facts indicate a deficiency of calcium, either that calcium is not available or that the body is not able to utilise calcium because of suppression of the parathyroid, or from stimulation of the thyroid which predisposes to the syndrome.

Presuming from the close similarity of the symptoms that all the diseases discussed are related, the same type of therapeutics should apply to all; this is found to be the case.

It seems probable that there is some causative factor in the syndrome which is not understood, as glucose will frequently raise the blood calcium in milk fever, a cure being affected. It is suggested that over-stimulation of the sympathetic system by increased protein metabolism will suppress the parathyroid and parasympathetic system and thus lower the blood calcium.

From the table showing the relationship between the symptoms found in the grass disease syndrome and those caused by over-stimulation of the sympathetic system, it will be seen that the two closely correspond, and it is probable that the cause of grass disease may be found among the factors which cause over-stimulation of the sympathetic system. Over-activation of the sympathetic system stimulates the thyroids and adrenals, and each of these organs stimulates the others in a vicious circle, the parathyroids and pancreas being inhibited. Over-stimulation of the sympathetic system also results in closure of the pyloric valve. Further, intestinal toxic absorption decreases the efficiency of the parathyroids; this results in the incomplete combustion of fats. In these circumstances one would expect to find an acetonæmic condition.

The table of comparative symptoms needs little comment or explanation, but it is remarkable to note the extraordinary similarity of the diseases and the identical effect produced in those organs which are controlled by the sympathetic nervous system. It is almost beyond the bounds of possibility that grass disease should have the same symptoms, except in the matter of degree, as milk fever, post-parturient dyspepsia, tetany and probably lambing sickness, and not be a disease of similar type. We know of no parallel case in which diseases are so closely approximated in symptomatology, but vary in their type of ætiology. The close resemblance between the diseases has not been recorded previously. This fact is of paramount importance. The *rationale* of the treatment of grass disease, as used by the writer, was based upon the following reasoning:—Acetone was found in the urine and the logical treatment for this condition is to provide sugar in utilisable form so as to enable the fat to be consumed in a normal manner. As post-parturient dyspepsia is effectively cured by glucose injection, and in view of the close similarity of the disease to grass disease, it seemed reasonable to surmise that benefit would result in grass disease from glucose injection. Also, as there is tetany present in grass disease, the administration of calcium is logical. Three cases of grass disease have been treated, with beneficial results, with calcium and glucose. It is realised that three cases are a minimum to report, but, in view of the resemblance of the diseases and the cures effected, it is felt that these cases are more than a coincidence.

The treatment adopted was as follows:—One pint of glucose (B.P.) in two pints of water, and three ounces of calcium gluconate (Sandoz) in two pints of water were injected subcutaneously at several sites. The glucose injection was repeated on the fourth day. Also 2 lb. glucose (B.P.) were given daily, in addition to which 10 grains each of biniodide of mercury and potassium iodide were given in food or water when the subjects were able to swallow. The diet allowed was for the most part a carbohydrate one.

Concerning the prevention of grass disease under present farming conditions, the surest method would be to keep horses in all the year round; it is realised, of course, that this is impracticable. Supplying a good mixed mineral diet, and turning the horses out to protein poor pastures, where, immediately before, the grass has been eaten as bare as possible by sheep, and keeping unusual numbers of sheep in with the horses so that the horses get as little grass protein as possible, is advised. If other food is necessary, as in the case of working horses, a carbohydrate food should be given—a maize food is suitable on that account, *e.g.*, "Uveco." Cattle cakes, particularly those used for milk production (which contain a high percentage of protein) have been observed to be a factor in bringing on grass disease, when the subjects have been out at grass. As for the total eradication of the disease, a more

balanced mineral manuring of the land is indicated and, most important, the eating off of the grass with sheep as before mentioned. Heavy liming of the land must be practised and the excessive use of phosphatic manures discontinued. These measures would improve agricultural conditions and tend to overcome the incidence of grass disease.

The following table shows the symptomatic relationship between the diseases we have been discussing and, where applicable, their association with the sympathetic nervous system :—

Grass Disease.	*Post-parturient Dyspepsia.*	*Milk Fever.*	*Tetany in the Horse.*	*Sympathetic.*
Pulse increased... ...	Pulse increased... ...	Pulse increased... ...	... ...	Pulse increased.
Temp. 101-105° ...	Temp. 101-105° ...	Temp. sub-normal to 103°	Temp. Normal to 102°	Temp. increased.
Respiration hurried ..	Respiration hurried ...	Respiration slow to hurried	Respiration hurried ...	Respiration hurried.
Pupil variable	Pupil variable ...	Pupil dilated	Pupil dilated	Pupil dilated.
Salivation increased ...	Salivation increased ...	Salivation increased ...	Salivation increased ...	Salivation increased.
Gastric stasis	Gastric stasis	Gastric stasis	Gastric stasis	No stasis.
Pyloric sphincter closed	... ...	... ...	... ...	Pyloric sphincter closed.
Intestine static ...	Intestine static... ...	Intestine static... ...	Intestine static	Intestine static.
Ileo - caecal sphincter closed				Ileo - cæcal sphincter closed.
Urine retained... ...	Urine retained... ...	Urine retained... ...	... ...	Urine retained.
Sweat glands stimulated	Sweat glands stimulated	Sweat glands stimulated	Sweat glands stimulated	Sweat glands stimulated.
Jaundice present ...	Jaundice present ...		Jaundice present ...	Jaundice present.
Anal sphincter contracted	Anal sphincter contracted	... ...	... ...	Anal sphincter contracted.
Vaginal sphincter contracted	... ...	... ...	... ...	Vaginal sphincter contracted.
Acetone present ...	Acetone present ...	Acetone variable ...		
Muscular tremors ...	Muscular tremors ...	Muscular tremors ...	Muscular tremors.	
Tetany present ...	Tetany present... ...	Tetany present... ...	Tetany present.	
Pharynx paralysed ...	Pharynx paralysed ...	Pharynx paralysed ...	Pharynx paralysed.	
Expression anxious ...	Expression anxious ...	Expression anxious ...	Expression anxious.	
No coma	Coma	Coma	No coma.	
Fæces firm, retained and " bitty " ...	Fæces firm, retained and " bitty " ...	Fæces firm, retained and " bitty "	Fæces firm and retained.	
Tail between legs ...	Tail between legs			
Trismus...	Trismus...	Trismus...	Trismus.	
Thirst after vomiting...	Thirst after vomiting...			
Pica present	Pica present	No pica	No pica	

Discussion.

Mr. W. Nairn, in opening the discussion, said: Mr. Stinson to-day breaks new ground in his observations on the etiology of grass disease of horses. This disease has enjoyed the promulgation of many hypothetical etiologies and any which strove to be exact in detail have usually suffered death. We will all welcome any view which may have within it the possibility of survival. Time and further study will assess the value of Mr. Stinson's theory. It will receive in Scotland very sympathetic consideration, as we know full well the difficulties of the problem. Mr. Stinson repeatedly emphasises the view that he considers grass disease an over-stimulation of the sympathetic system, but in Scotland to-day we incline to the view that the appearance of sympathetic excess is due to the varying degree of destruction of the parasympathetic nerve supply. Drs. Sclater and Reynolds demonstrated that the vagus shows definite degenerative changes. I do not know whether any metabolic disturbance such as Mr. Stinson describes could produce such severe effects on the vagus. It would be interesting to know if it could.

I think Mr. Stinson's enumeration of various obscure diseases points to the great need there is for much more study being given to the physiology of domestic animals, as until this is more fully understood we cannot make much progress.

The presence of acetone bodies in the urine of cases of grass disease is not surprising, considering the grave disturbance of liver function found. This toxæmic disturbance, which is aggravated by the interference with the nerve supply, is likely to produce the breakdown in the normal functioning.

Mr. Stinson does not tell us whether his three cases were acute or chronic in type, nor yet does he describe symptoms before and after treatment. I think this is a serious omission from his address.

If the condition were due to excessive stimulation of the sympathetic by metabolites, then we would expect that the removal of the cause, and suitable therapeutic measures would rapidly remove the clinical features. So far, we do not find this happening in grass disease; rather do we find the case lingering on for months until regeneration of nerve fibres can take place.

Many years ago I used calcium and glucose in the treatment of grass disease. I used calcium intravenously and glucose orally; but could not say that either of them had any therapeutic value in my hands. So far, my best remedial agent for the chronic cases has been a dietary mainly composed of young turnips, when they can be had. It is really surprising how some improve on this, but I ascribe the benefit to the laxative watery diet.

I was interested to note Mr. Stinson's experience in the incidence of the disease. He considers lime a preventive.

A careful survey of the incidence, conducted by the A.D.R.A., shows that it as readily appears in pastures well-limed as on those which have never been limed. It is not solely a disease of improved pastures, but has been found on high grazings of over two thousand feet elevation and where Nature has been undisturbed. While one must admit that turning animals suddenly outside cannot be altogether beneficial, it does not play a big part in the incidence, as we get the disease in animals that have never been housed.

I was interested to note the essayist's remark that the injection of glucose raised the blood calcium in milk fever. I wonder if Dr. Greig agrees, as it suggests the possibility that, while a fall of calcium is a regular feature of milk fever, it is more a secondary phenomenon than the cause of the disease.

As the essayist has included in his remarks a reference to lambing sickness in ewes, I should like to make brief reference to it, especially as these remarks are of interest to the country practitioner at this time.

It has been suggested by Mr. Stinson and Dr. Greig that pregnancy toxæmia is a hypo-glycæmia, and that lambing sickness is a hypo-calcæmia. This conveys the impression that they are two distinct entities, but I am inclined to think they are the same trouble, varying only in their response to treatment, solely because in the latter condition we have an active functioning udder. The ewes in both troubles acquire the disease from the same conditions and behave practically in the same way clinically. If one gets a typical case of pregnancy toxæmia within twelve hours of lambing and empties the udder then inflates it, one will most likely find recovery as rapid as after lambing, whereas inflation of the non-functioning udder is quite hopeless. Can it be that when we inflate the udder we throw into the circulation something from the udder which exerts an endocrine control of the sympathetic system? So far, injections of glucose have given no beneficial result in pregnancy toxæmia, but I have found treacle in drinking water quite good as a prophylactic.

Before closing my remarks, might I just draw the attention of the younger men to the fact that, where we have complete stasis of the alimentary canal in the conditions we have been discussing to-day, the oral administration of drugs is not hopeful, as they do not seem to reach an absorbing area. Perhaps some of you may find a more effective method of therapeutics. I confess to an indulgence in speculative ideas. It is now open to others to do likewise.

Professor J. R. Greig said that he had not had the privilege of reading the paper previously; it was full of suggestions and somewhat difficult to follow. He was, however, amazed to find that Mr. Stinson had classed together such diseases as milk fever, post-parturient dyspepsia, tetany in the horse, and grass disease. He was unable to follow the argument that these diseases were different manifestations of the same pathological entity; he did not think, quite frankly, that it could be argued that they bore any real resemblance in their clinical manifestations. It is stated in the paper that "milk fever was always associated with a deficiency of glucose," on the contrary, the glucose was usually normal or high. Post-parturient dyspepsia was not associated with calcium deficiency. Dr. Dryerre had examined the blood of three cases and found a distinctly low glucose value. Twenty cases of grass sickness had been examined and the calcium content of the blood was normal in each case. These findings did not support Mr. Stinson's theory.

Three years ago he had been bold enough to interpret the symptoms of grass disease as due to an absolute or relative over-stimulation of the sympathetics. Part of that theory might now be abandoned, but one fact had emerged, namely, it had been shown that there was degeneration of the vagus in chronic cases.

Mr. Stinson postulated cold, lime deficiency and excess of protein in pastures as the three chief causal factors of grass disease. He thought they would all agree that the disease incidence was greatest in summer in Scotland—that would seem to rule out cold. Calcium deficiency in pastures could hardly be held responsible, since the A.D.R.A. survey showed that horses became attacked on all kinds of pasture, often on those which had been recently limed. High protein content could not be responsible, for the same reason; that the disease could be encountered on all varieties of pasture. In the *Veterinary Record*, Mr. Stinson had recorded one of his cases as having occurred in December; the disease in Scotland, though not unknown during that month, was unusual in winter. He wondered if Mr. Stinson had quite eliminated the possibility of a diagnostic error, which was not at all impossible with a disease like grass disease. There was one characteristic feature of grass disease which was important—its regionality, with some tendency to spread westwards. Professor Boddie held some interesting views in regard to the geographical distribution of the disease and he hoped he would explain these views, which were an elaboration of observations made by Inglis, that the disease seemed to spread along valleys. How could factors concerned in a metabolic upset operate in such well delimited areas as those in which the disease occurred? The President had said that he (Professor Greig) considered that pregnancy toxæmia was a hypoglycæmia; in this he was mistaken—he had stated that pregnancy toxæmia was not a hypo-calcæmia. Mr. Stinson had found ketone bodies in the urine of grass disease, but ketone bodies were found in a number of diseased conditions and might have much or little significance.

He had heard the suggestion, in Mr. Stinson's paper, that the introduction of glucose raised the calcium content of the blood in milk fever. That suggestion was new to him.

These, somewhat scattered, remarks were all he had to offer in the meanwhile. He wished to thank Mr. Stinson for bringing forward new ideas and suggestions, since all fresh ideas on this puzzling disease were useful and welcome.

Professor W. M. Mitchell observed that certain parts of the paper had interested him, and especially one touched on by Professor Greig—the degeneration of the vagus. There was a somewhat similar problem in "shivering," in which condition he had found degeneration of the sciatic nerve. As a control, he had taken specimens from horses killed for food at the Zoological Gardens and found degeneration in six out of 13 cases. The median and the radial nerves, as well as the sciatic, showed similar degeneration in some "shiverers."

He wondered whether this degeneration in the vagi of horses with grass disease was important or not. He felt that the pathology of the condition should be investigated very carefully. There were worms in nearly all horses, were they quite sure that they had nothing to do with the disease? When they remembered the amount of sclerosis and fibrosis which was frequently found along the course of the cranial mesenteric artery and its branches, might there not be a possibility of localised intestinal paralysis from secondary changes occasioned by sclerostome larvæ?

He mentioned the frequency of cases in which he had seen enlargement of the termination of the œsophagus—sometimes with a diameter of 3-ins. He wondered what was the cause of this. Many of these cases, though grossly pathological when examined, yet had appeared clinically sound.

Professor Greig said that, arising out of Professor Mitchell's remarks, he would just mention that the degeneration of the vagus in grass disease was histologically shown to be acute degeneration, often of less than five days' standing; it was not a chronic degenerative change.

Professor R. G. Linton said that he knew quite as little as anyone else about grass disease, but he would like to comment on the nutritional influence. He thought the suggestions made by the speaker were by no means conclusive. It was a comparatively new disease, as Mr. Stinson had said. There had been no really fundamentally different change in the feeding of horses during recent times. Pastures were usually richest in protein in April and May; grass disease incidence was greatest in June and July, by which latter month the protein content was considerably lower. He believed there were few cases in April or May. There were distinctly more cases when the soil was warm in June and when the pastures were not so rich in protein.

Keeping animals of any kind, including horses, on the poorest pastures was not good practice. Cattle always did better when out at grass early in the year than when put out later on. He would like to ask how calcium deficiency arose, and what was its cause.

Professor G. F. Boddie asked, was it really a new disease? Mr. Inglis had told them some time before, at a meeting, that he could remember seeing cases 30 years ago. Some other people also believed that it was not a new disease.

He thought Mr. Stinson's hypothesis was somewhat complex and needed time to consider. He had practised in a grass disease area for some years. So far as pastures rich in protein were concerned, he had also found cases of the disease occurring on high moors and on haughs (riverside meadows), but not necessarily near the villages. He had never seen it on a croft. Liming of the land did not prevent it; he had had cases on farms which had been regularly limed for many years; in fact, some of them suffered as heavily as any—he recalled one very good farm where he had lost four horses in two weeks from grass disease. He had never seen it, however, on an intensively-grazed dairy farm, where the horses followed the cows over the pastures. The cold theory was not applicable; except perhaps that sometimes a cold frosty night early in the spring would bring one or two cases. He thought that in a grass disease practice one of the most welcome things to the harassed practitioner in the summer time was a cold and wet week-end following a hot spell, for no cases seemed to occur then.

Regarding thirst, he wondered if thirst was present, and, if so, could the horse swallow? He found sometimes that artificial salt-induced thirst helped a case, and when thirst returned in an animal it could be looked upon as a good prognostic feature.

Professor Greig had made reference to the mode of spread. His (Professor Boddie's) observations were that the disease spread from East to West rather rapidly along the level plain but less rapidly when the land rose to the West, and practically never over the watersheds. That was to say, the spread was in a direction opposite to the prevailing wind. Mr. Inglis had also mentioned that the spread was usually along the plains and river valleys and not over the hills.

Professor Linton rose to ask whether everyone was quite satisfied that grass disease was not a form of botulism. Personally, he thought it would be profitable to continue researches on this line.

Mr. Nairn asked Professor Linton if he could say exactly what botulism in animals really was. He added that feeding tests of *B. botulinus* cultures had proved negative so far as producing clinical grass disease was concerned. He requested Mr. Brownlee, of the A.D.R.A., to speak on this point.

Mr. A. Brownlee said that experiments had been carried out using botulinus toxin, and he described them. He mentioned the association of deficiency of phosphorus and parabotulism in the South African disease lamzietke, in which, owing to the craving for phosphorus, animals learned to chew half putrid bones on the veldt and developed parabotulism It had even been suggested there might be a somewhat similar relationship in grass disease—horses eating dead birds, rats, etc.

Professor Mitchell desired an opinion on whether there was any general marked deficiency in lime and phosphorus in grass disease areas.

Professor Linton thought there was not. He mentioned that lamziekte was localised to one particular area in South Africa. He suggested that it would serve a useful purpose if the reports of the Moredun experiments were published and every veterinary surgeon in Scotland given a copy. He knew there had been an enormous amount of work done on this disease, and thought it should be made available, since even negative results were useful.

Professor Boddie expressed the view that it would be good policy to send copies to the agricultural community, in addition.

Mr. Brownlee asked Mr. Stinson how he would explain the non-appearance of grass disease in horses which were put on to pastures where, immediately previously, a succession of three or four cases had occurred under natural conditions. The conditions of cold, calcium content and protein content in the pastures were quite unchanged in these cases.

Mr. J. Henderson wished to know whether any grass disease was reported from the Continent, and, if so, whether any workers abroad were engaged in research upon it.

Mr. Nairn replied there were several similar diseases, but none was identical with grass disease. Professor Greig confirmed this.

Mr. H. M. Wilson said he had heard that a similar disease was prevalent in Belgium about 60-70 years ago, but that it had died out.

Professor Mitchell asked whether worms had been exonerated from blame.

Mr. Nairn recounted the result of extensive dosings which were made against worms some years ago. In one practice the first horses to be treated for worms were those that took grass disease first in the succeeding season.

Dr. T. W. M. Cameron said that it was impossible to say whether or not worms might play some part in the causation of this disease. He, as a helminthologist, was somewhat sceptical. Nearly 100 per cent. of horses harboured worms, belonging to some 50 to 60 species, and in any given clinical case of worm infestation it was difficult to say exactly which species was responsible for the symptoms.

Information regarding the distribution of species in horses was scanty, but sclerostomes do elaborate a toxin, and some toxins are known to be nerve poisons. Experimental feeding would be necessary with pure cultures of whatever species were found to be present in those areas which were infected with the disease. Obviously, this would take some considerable time to carry out. He did not think that the presence of worms, however, need have any correlation with the incidence of grass disease, for it was not common in many districts where worms were numerous, and worms had existed for probably as long as the horse, while grass disease was a comparatively new disease.

Professor Linton pointed out that still he was not satisfied that botulism could be eliminated as a causal factor. He reminded the members how botulism had been spread in the U.S.A. by poultry, and wondered whether sufficient attention had been paid to the possibility of the introduction of botulism into this country by the importation of American oats when the disease first appeared.

Mr. W. P. Blount observed that Mr. Stinson had based his hypothesis upon the effects of stimulation of the sympathetic. The effects in animals of stimulation of the sympathetic were not necessarily the same as in man. On a recent visit to Utrecht he had seen the results of experiments which showed that injections of adrenalin lowered the pulse rate from 90-60 in adult cattle, from 125-65 in cows suffering from milk fever: both atypical effects, in terms of human physiology. Similar results were obtained in calves.

Further, Greig had failed to obtain relaxation of the bronchioles in asthma in the dog by injecting adrenalin, and Dryerre had observed that stimulation of the vagi did not necessarily slow the dog's heart. He thought Mr. Stinson had taken it for granted that animals reacted in the same way as did man.

He wished to point out that there were areas in England which were limed and others which were not limed, just as there were in Scotland, but there was comparatively little grass sickness in England. Moreover, oats were fed in England just as they were in Scotland, and probably England was a heavier oat-importing country than Scotalnd, yet it had little of the disease.

The Reply.

Mr. O. Stinson said in reply: "Before replying to the discussion, I wish to acknowledge the valuable assistance of Mr. Peck, B.V.Sc. Mr. Peck, who is a student in the Liverpool College, has been with me for a month seeing practice, during which time he has been a great help in the preparation of this paper.

" May I take this opportunity of congratulating the Division in procuring such an experienced practitioner as Mr. Nairn for the opening of the discussion. With regard to the remarks offered by Mr. Nairn on the paper, I note that Drs. Sclater and Reynolds are stated to have demonstrated that the vagus nerve shows degenerative changes. Without further comment, I must state that I cannot accept this as being conclusive evidence, since I have so much clinical evidence to point to over-stimulation of the sympathetic nervous system. I fully recognise that the finding of acetone bodies is not decisive evidence of a primary metabolic trouble, but at the same time it must be considered of the greatest importance when probing into the etiology of grass disease, particularly when one has distinct evidence of protein stimulation. It was stated in the paper that the treatment indicated had been found beneficial in cases other than the per-acute or acute types of the trouble. Mr. Nairn, in his remarks, states that he would expect, if the condition were due to excessive stimulation of the sympathetic by metabolites, that the removal of the cause would rapidly remove the clinical features. In answer to this, I would say that in the case of post-parturient dyspepsia (frequently caused by a high protein diet) the symptoms are by no means quickly relieved by a non-protein diet. The fact that it is stated by Mr. Nairn that he has found young turnips to be the best remedial agent for chronic cases assists my theory, since it is well known that turnips contain a good deal of sugar. This point is particularly interesting to me. I shall not in future fail to advise the use of young turnips as a food in cases of the disease. The fact that the A.D.R.A. has found that the incidence of disease is as great on well-limed pastures as on pastures which have never been limed might, on the surface, appear to be important. I consider probably that it is not the lime deficiency from the pasture which is a causal factor, but that the use of other manure, such as natural and phosphatics, stimulates the pasture, resulting in a high protein yield. My experience agrees with that of the " opener," that it can be a disease of high grazing over 2,000 feet elevation where nature has been undisturbed. I would say here that the natural manure has been the agent bringing about the trouble. I agree that animals that have never been housed contract the disease. This does not disprove the protein theory. At this point I would like to mention that the disease we all know as post-parturient dyspepsia is a disease particularly of the North of England and Scotland, this applies similarly to grass disease. I have conducted experiments on farms in the North and the South, feeding the same protein diet to milch cows. The cows in the South have not become affected in the least, whereas post-parturient dyspepsia prevailed among the cows in the North. Thus the climatic conditions have an effect on the animals concerned in the North. I consider, likewise, that the conditions of the North have something to do with the causation of grass disease.

" With regard to the comment on glucose administration and the rise of blood calcium in milk fever, it is common knowledge that cows suffering from milk fever have recovered after the administration of glucose, and since milk fever is constantly associated with a low blood calcium content, there must be some connection in the disease between glucose and calcium. May I say here that I believe a low blood calcium to be constantly associated with milk fever. This, I consider, has been proved by Dr. Greig and his collaborators. At this stage may I take the opportunity of thanking Mr. Nairn for his part in the discussion.

" In reply to Dr. Greig's comments on the paper, I note with pleasure his comment that it is full of suggestions, but I am sorry it was, as he stated, somewhat difficult to follow. I feel that it would have been better had the paper been published previously. He was amazed to find that I had classed together such diseases as milk fever, post-parturient dyspepsia and tetany in the horse, and grass disease, and stated that he was unable to follow the argument that these diseases were different manifestations of the same pathological entity, and that he did not think, frankly, that it could be argued that it bore any resemblance to the clinical manifestations. A study of the table appended to the paper should, I think, be enough at least to suggest that there are possibly some associations, and in the field, where one is daily meeting these conditions, an association appears to be beyond all doubt. If one did not realise this one would be seriously " up against it " in general practice. With regard to the statement that post-parturient dyspepsia is not associated with calcium deficiency, I am sorry that I cannot agree with this, as I have ample proof that there is an association. Dr. Greig himself has very kindly examined the specimens of bloods from cases of grass disease and post-parturient dyspepsia for me, and I was struck by the rather low constant calcium content in both diseases. Dr. Greig states that these findings do not support my theory. I have already explained the part the deficiency of lime on the pasture probably plays; that is, combined with the phosphatic and natural manuring of the pastures of recent years. It is possible, of course, that the lime may be, from a dietetic point of view, more closely related, but I am not prepared to give any definite opinion on that point. I have explained what I mean by the effect of cold or climatic conditions, as well as ingestion of excessive proteins, in the causation of the disease. The very fact of the greatest incidence being in the summer does not rule out the climatic conditions, for they are ever present; to particularise (and I have found sudden cold weather to be frequently the last straw in the causation of post-parturient dyspepsia) it must be remembered that the difference in temperature in the summer between warm days and cold nights is sometimes very great. Dr. Greig said that the high protein content of grass could not be the cause of grass disease, as the disease could then be encountered on all kinds of pasture. I am quite aware that it is found on all varieties of pastures, but it must be remembered that, when a farm is managed in a particular fashion, it affects every corner of the farm whatever the variety of the pasture. At the same time, there is no doubt that it does affect some pastures more than others, which one would expect.

" With regard to my powers of the diagnosis of the disease, and the possibility of a diagnostic error, I would like to say that two other veterinary surgeons have seen these cases, and they agree with my diagnosis. In each case I was actually requested to attend a horse suffering from grass disease, by the farmer himself. With regard to my statement that the introduction of glucose raised the calcium content of blood in milk fever, this has been dealt with in replying to Mr. Nairn. It should be noted that it was not stated that milk fever is always associated with hypoglycæmia. I wish to thank Dr. Greig for his contribution to the discussion.

" In reply to Professor Mitchell, I beg to offer him my thanks for the part he has taken, and to say I was pleased to note that parts of the paper interested him. I note that he also does not agree entirely with the degeneration of the vagus finding. The facts brought to light by Professor Mitchell as a result of examining nerves for degeneration in cases of " shivering " are very interesting.

" Replying to Professor Linton, he noted that the suggestions made in my paper were by no means conclusive, and that there has been no real, fundamental change in the feeding of horses during recent times. There may have been no fundamental change in the feeding of horses, as Professor Linton suggests, but in my opinion the protein of the pasture of the North has the same effect in causing grass disease as proteins in the food of milch cows in the North. Professor Linton suggests that there were very few cases in April and May, and that the greatest incidence is in June or July. With regard to feeding proteins, I have frequently found, although the effects are noticeable sometimes in a few days, that it is in many cases a matter of weeks, and sometimes more. Generally speaking, not keeping animals on poor pasture could not be advised, as stated by Professor Linton, but if the theory with regard to the causation of the disease is correct, it is important. The matter of calcium deficiency has already been dealt with.

" Concerning the remarks by Professor Boddie, I would say that I look upon this as a new disease, in the same

way as I look upon canine hysteria as a new disease: I quite believe there were cases, as suggested by Professor Boddie, 30 years ago or more (probably 40) and one could quite understand that the disease would, although very rarely, be encountered even in those days. With regard to cases occurring on high moors, I must state that I have found the same. I stated that I found them frequently near villages in my practice; this I have noticed particularly in one district. The association with high pastures has been dealt with in replying to Mr. Nairn. I notice that the speaker has found it on land which has been limed regularly for many years, and I quite think it possible, because those farms have carried a great number of animals for a number of years. As to the disease not being found on intensively-grazed dairy farms where horses follow the cows over the pasture, I must say that I have found cases on such pastures. In this connection it must be remembered that natural manure, which is on all pastures under grazing, is a nitrogenous manure, and that protein is essentially a nitrogenous food. Grass protein can be brought about by any method of manuring—natural or artificial. I contend that the manuring by overstocking alone or by manuring by overstocking *plus* artificial manures, can bring about the disease. I am inclined to think that overstocking, particularly with sheep (under conditions peculiar to the North), may be the full explanation of the incidence of grass disease. In the same breath Professor Boddie says that the cold theory was not applicable, except perhaps that a cold frosty night early in the spring would bring one or two cases. This seems to be somewhat contradictory, and must be considered very considerably to assist the theory. He states that in a grass disease practice one of the most welcome things to the harassed practitioner in the summer time is a cold and wet week-end, following a hot spell, as no cases seem to occur then. It must be remembered in this connection that at the time it is cold and wet the grass is not growing. I note that Professor Boddie observed that the disease spreads from the East to the West rather rapidly along the level plain, but less rapidly when the land rose to the West, and particularly never over water-sheds—the spread is in the direction opposite to the prevailing wind.

"Mr. Brownlee asks how I would explain the non-appearance of grass disease in horses put on to pastures where, immediately previously, a succession of three or four cases had occurred under natural conditions, as the conditions of cold, calcium content, and protein content in the pasture were in these cases quite unchanged. I think the theory can be upheld, and these conditions explained. The horses which were put on to the pasture later could not eat the same amount of protein as the other horses, at least they could not eat the protein which had been already eaten and it is well known that the protein content of grass quickly alters in the same field. And then again exactly the same weather conditions may not have prevailed. I look upon grass disease as a disease brought about under conditions almost peculiar to the North, by recent methods of farming, enabling the carrying of more stock. Occasional cases are met with in the Midlands and the South; the incidence cannot be compared with that of the North, and assuming the theory to be correct, it is what would be expected. With regard to Professor Linton's later point, I think if the disease had been due to the botulinus toxin it would by this time have been transmitted by the feeding experiments which have been conducted. Further than this, when I have come across cases of botulism in cattle, which has occasionally been my experience, I have always found protrusion of the tongue, and have for many years looked upon paralysis of the tongue as an essential symptom of botulism, at least in the bovine.

"Concerning Mr. Blount's comments on the paper, I realised that the stimulation of the sympathetic nerve in animals does not necessarily bring about the same results as in man. The point concerning the difference between the South of England and the North of England and Scotland has been explained."

Mr. Peck asked if, as a visitor, he might take part in the discussion. Concerning the observation of Dr. Greig, too much stress had been laid upon the biochemical and physiological parts of the paper which, Mr. Stinson had stated, were purely conjecture. It was of the greatest importance to deal with the paper from its clinical aspects. Criticism of the table of comparative symptoms was lacking, and whatever might be the criticism of the rest of the paper, it was beyond reasonable doubt that the diseases under discussion were, from a clinical aspect, related—as stated for the first time by the essayist. Dr. Greig and Professor Boddie had both criticised the theory propounded, because they had observed the disease chiefly in river valleys. This supported the views held by Mr. Stinson, for there, of all places, one would expect to find the causes elaborated by the essayist. It did not seem to be understood that all the causes of grass disease set forth in the paper had, of necessity, not to be in operation at the same time, but that any cause or pre-disposing cause which would stimulate the sympathetic was a factor in the production of grass disease. Professor Boddie had taken the essayist to task for stating that thirst occurred in grass disease. This was not what he had said, his statement being that thirst occurred after vomition. Professor Linton had asked what was the cause of blood calcium deficiency, and it was suggested that, as all the causative factors of grass disease discussed in the paper were stimulation of the sympathetic system, it would be reasonable as a hypothesis to presume that this stimulation was a feature of grass disease. This being the case, the parasympathetic, the pancreas (insulin) and the para-thyroids would all be depressed, with the consequent non-availability of blood sugar and calcium.

The Double Intradermal Test and the Doubtful Reactor.

By K. D. Downham, B.V.Sc., M.R.C.V.S., D.V.H., Veterinary Adviser, Department of Veterinary Pathology, University of Liverpool.

The importance of classifying as reactors animals which give comparatively small œdematous swellings after the introduction of tuberculin or johnin into the skin has been brought home to me from experience gained in testing a large number of animals. I thought it might be of advantage to those using the test if I give details of two cases out of a series which have given small swellings after injection and have proved positive on *post-mortem* examination.

Recently I have made a practice of inoculating animals in the caudal fold as well as in the skin of the neck when

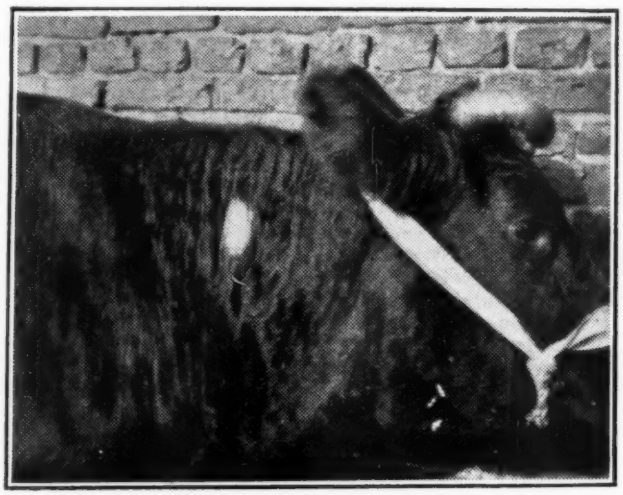


Fig. 1: A Reaction to Tuberculin in the Skin of the Neck.

testing a herd. The reaction occurring after injection in the caudal fold has frequently proved of great value in arriving at a diagnosis, particularly in testing with johnin, which, as a rule, gives a less intense reaction than tuberculin. I consider the caudal fold is useful as a site for a confirmatory test, particularly when a small, doubtful swelling occurs in the skin of the neck.

Animal A was tested with tuberculin and johnin simultaneously in the skin on the neck and in the caudal fold with both diagnostic agents.

Fig. 11: A Reaction to Tuberculin in the Caudal Fold.

The skin measurements were as follows:—

	Initial skin measurement.	48th hour.	72nd hour.
Tuberculin 0·1 c.c.	7 mm.	13 mm.	14 mm.
Johnin 0·2 c.c. ...	7 mm.	13 mm.	13 mm.

The swelling was sensitive and œdematous, and I considered the animal to be a reactor to tuberculin and to johnin, from the appearance of these swellings.

A veterinarian, who has had considerable experience of tuberculin testing, was asked to give his definite opinion on the swellings on the neck; he was unwilling to commit himself one way or another and said he would like to test the animal by the subcutaneous method before giving his opinion. I considered this unnecessary and inadvisable and pointed out the well-marked elongated swelling in the caudal fold, which had resulted from the injection of tuberculin in this site, and the somewhat smaller swelling in the other fold resulting from the injection of johnin.

The animal was slaughtered and a very careful examination was made of all the organs and glands in the body. A hard nodule, about the size of a small marble, was felt in one mesenteric gland. When sectioned this was seen to be a caseated and partially calcified tuberculous lesion. Tubercle bacilli were demonstrated in smears prepared from this lesion. All the other organs and glands were perfectly healthy, with the exception of the intestines, which showed definite evidence of Johne's disease in several places, including the region near the ileo-cæcal valve. Smears prepared from the intestinal mucous membrane and stained by the Ziehl-Neelsen method showed a large number of small acid-fast organisms, arranged in clumps, which were typical of Johne's disease bacilli.

Animal B.

This animal was tested with tuberculin in the following sites:—

(1) Right sub-palpebral fascia	0·2 c.c.
(2) Right caudal fold	0·1 c.c.
(3) Left vaginal wall	0·2 c.c.
(4) Anterior skin on left side of neck ...	0·1 c.c.
(5) Posterior skin on left side of neck ...	0·1 c.c.
(6) Skin on left side of withers	0·2 c.c.

Forty-eight hours later the same dose of tuberculin was injected into the same sites. At the seventy-second hour a bean-sized nodule was present in the sub-palpebral fascia. The right caudal fold was visibly enlarged. There was apparently little change in the left vaginal wall and the readings of the injection into the skin of the neck were as follows:—

	Initial skin measurement.	48th hour.	72nd hour.
Anterior site ...	7 mm.	11 mm.	12 mm.
Posterior site ...	7 mm.	10·5 mm.	11 mm.
Withers	9 mm.	13 mm.	14 mm.

None of these swellings was very typical and an experienced veterinarian considered that the animal was not a reactor to tuberculin. I decided to re-test the animal with tuberculin from another laboratory by the double intradermal method. I obtained the following results:—

Initial skin measurement.	48th hour.	72nd hour.
7 mm.	13 mm.	17·5 mm.

The swelling was œdematous, insensitive and not warmer than the skin in another part. I considered her to be a reactor to tuberculin.

The animal was tested with johnin, with the following results:—

Initial skin measurement.	48th hour.	72nd hour.
7 mm.	12 mm.	15 mm.

The swelling was warm, sensitive and œdematous. The reaction was considered to be positive.

The animal was slaughtered a few days later and a careful examination was made of the organs and glands.

No evidence of tuberculosis was found. The left lung showed areas of congestion in a small area. The mesenteric glands were œdematous and enlarged.

The small intestine showed typical lesions of Johne's disease throughout the greater part of its length. Patches here and there were acutely inflamed and corrugated. The ileo-cæcal valve was acutely inflamed. The cæcum showed

The Veterinary Record.
December 27th, 1930.

Colonial Veterinary Services.

Among the changes and evolutions of the profession, few are more noticeable to the student of affairs than those taking place in our Colonies and Protectorates. Their elder sisters, the Dominions, have for long shown a lead to the Mother Country by their better appreciation of veterinary work. South Africa is the most recent, as well as the most striking example of the return given by veterinarians for the confidence placed in them by the Government. Thirty years ago that country was rife with disease; stock farming was unprofitable; meat, butter, and eggs were very extensively imported. To-day, the major epizootics, such as rinderpest and pleuropneumonia, have been eradicated; thanks to the Research Institute there, the more important enzootic diseases have been explored, and knowledge now exists which enables the staff adequately to control and to prevent serious economic loss. Industrially, South Africa is self-supporting for stock, and she now exports those animal products which, even subsequent to the South African War, she was importing. Yet perfection has not been reached, research continues, both into disease and into problems of management, and she is now training veterinarians to meet her professional requirements.

So, in, as yet, a humble way, the younger or smaller Colonies are endeavouring to place the animal industry on a sound and secure footing. In some, a full appreciation of the meaning of animal wealth has yet to be learned; in others, financial limitations alone prevent the respective Governments from putting into effect those operations on investigation, application and economic development of stock which they approve and desire.

The Colonial Office has already, with commendable alacrity, implemented some of the recommendations of the recent Lovat Committee. The Scholarship Scheme has been commenced and an Adviser on Animal Health to the Secretary of State has been appointed. The other proposals of Lord Lovat's Committee, which dealt with the establishment of a School of Tropical Veterinary Science and the unification of the scattered units comprising the Veterinary Services in the Colonies, are doubtless under active consideration. The importance of these services, not only to the Colonies themselves but also to Great Britain, is considerable even to-day, yet they are still in their infancy and, from a study of the Reports of Northern Rhodesia and the Gold Coast, which are reviewed in this number, it is apparent that our Colonies have before them a great future for the development of live stock. We doubt not that, scattered though they are, and lacking the political cohesion of a Dominion, their animal welfare can be made no less secure than has been the case in Canada, Australia, and South Africa.

typical lesions of Johne's disease. The omentum showed evidence of peritonitis.

A microscopical examination of smears from the intestinal mucous membrane showed a number of acid-fast bacilli, typical of Johne's disease. The organisms were found to be most numerous in the neighbourhood of the ileo-cæcal valve.

Fæces taken from the cow during life were treated by Petroff's method and inoculated into the guinea-pig. The laboratory animal lived for six months. On *post-mortem*, lesions were found in the precrural glands, spleen and lungs of the guinea-pig. Acid-fast organisms resembling tubercle bacilli were found in smears prepared from these organs; giant cells and caseation were evident in sections made from the spleen, lungs and precrural glands.

From these findings it appeared that tubercle bacilli were present in the fæces of the animal, and the animal was tuberculous.

Colonial Veterinary Service Reports.

Northern Rhodesia.

The Annual Report of the Department of Animal Health for 1929 (Crown Agents for the Colonies, 4, Millbank, S.W.1) is a foolscap publication of 27 pages, with several illustrations of the new Research Laboratory at Mazabuka.

Stock Census.

Cattle.	*Sheep and Goats.*	*Pigs.*	*Equines.*
472,500	4,760	3,326	507

Staff.

The Director of Animal Health, Mr. J. Smith, M.R.C.V.S., D.V.H., is assisted by Mr. R. A. S. Macdonald, M.R.C.V.S., B.SC., as Research Officer, and by six Veterinary Officers and thirteen Stock Inspectors. The Deputy Director, Lieut.-Colonel Turnbull, M.R.C.V.S., D.S.O., was transferred during the year as Chief Veterinary Officer to Nyasaland.

Research.

The new Laboratories opened during 1929 provide accommodation and facilities for observation on (i) Pathological; (ii) Nutritional, and (iii) Genetical problems in Northern Rhodesia. The equipment is complete, and

includes water, gas and electric installation. Two technical assistants are attached to the Research Officer. A Conference of Veterinary Officers was held at the Laboratory during the year, and the Research Officer attended the Pan-African Veterinary Conference in Pretoria.

Diagnostic Survey.—Smears numbering 887 were examined, disclosing trypanosomiasis, anaplasmosis, piroplasmosis, anthrax and blackquarter.

Observations were made on piroplasmosis; streptothricosis (Senkobo skin disease), in which other organisms are believed to be associated; rabies and vegetable poisonings. Cultivation of proved and suspected poisonous plants has been arranged for.

Disease.

Northern Rhodesia has continued free from rinderpest and East Coast fever, and is rightly taking adequate precautions against their introduction. The improved situation with regard to rinderpest in Tanganyika Territory has enabled the de-stocked buffer zone to be again occupied under control.

Pleuro-pneumonia of cattle is confined to the Barotse country, where 95,000 cattle are living. No active steps within this area have yet been possible, but measures of precaution against its extension continue to be successful. Trypanosomiasis (the species concerned are not named) exists, as would be expected in a Territory carrying so much *Glossina* country. Attention is drawn to the great value of Antimony potassium tartrate injections as a means of maintaining animal life so as to enable economic work in the mining and tobacco growing areas to proceed. No ivestigations into the many problems of the tsetse fly are being conducted, as it is felt that these can best be carried out where an adequate staff is available. Contagious abortion is widespread, and, on European farms, is being dealt with by the use of live vaccine. Piroplasmosis, anaplasmosis, and *Theileria mutans* infections occur. This latter is of especial interest owing to its relationship with *Th. parva* of East Coast fever, not yet identified in Northern Rhodesia, and the need of a diagnostic differentiation between the two is stressed. Dipping is already extensively practised; there are, up to date, 166 dipping tanks, and considerable progress with this policy is foreshadowed. Rabies is on the increase, mainly owing to infection in the wild carnivora, and the presence of large packs of native-owned hunting dogs. The Research Officer cites the incubation period as 19, 89, and 201 days in three dogs bitten on the forearm, the chest, and the lumbar region respectively. One European who was bitten had the wounds cauterised and subsequently received inoculation; he was healthy ten months later. (In Kenya, a form of rabies, apparently but slightly pathogenic to man, was reported in 1912; and Nyasaland and French West Africa have also recorded what may be regarded as a typical rabies).

Anthrax and blackquarter occur, and, when detected, are successfully dealt with by vaccination at a cost of 1½d. and 3½d., respectively, per dose of vaccine.

Tuberculosis of bovines is limited, so far as is known, to the area of Fort Jameson. Precautions against introduction are being exercised. Among other disease conditions are mentioned a specific ophthalmia in cattle, heartwater, whitescour and other infantile disorders of calves, all of which are greatly controlled by regular dipping.

It is suspected that aphosphorosis occurs, and the feeding of bone-meal in large scale experiments has had striking results.

Genetics.

Mention is made of the deterioration of the native-owned cattle, and the need for improvement. This is first hoped for from selection within the herds and by a policy of castration. The introduction of Afrikander bulls appears to have increased the stamina and the powers of resistance to climatic conditions.

European owners have not yet made full use of the facilities offered by the Government and the Empire Marketing Board for the importation of improved breeding stock, and some have sacrificed female animals for slaughter on account of prevailing high prices.

Attention is drawn to the necessity for augmenting natural pasture to meet the demands of genetically improved stock; and to the liberal assistance for its importation offered by the Government.

Natural Pasture.

Frequent destruction by burning has encouraged the growth of coarse grasses of little feeding value. Nutritional deficiency is suspected, but moderate close grazing has shown to what extent pastures can be improved. This is encouraged by fencing, for assisting which Government offers easy financial terms. Information regarding poisonous plants continues to be collected, and a botanical survey is urged.

Management.

Considerable economic loss results from adhering to the native system of kraaling cattle at nights, when, in the rainy season, these yards become a muddy quagmire. Fencing is advocated. Climatic conditions embrace a dry season of six months, during which pastures become very dry, and grass fires destroy much grazing. In this season supplementary food stuffs, such as maize stover, groundnut hay, should be available, or hay cut from the pastures.

Routine dipping and feeding with bone meal have been referred to as improving the condition of stock. More attention should be paid to dip testing.

Economics.

Stock to the native owner is a social rather than an economic asset: ample grazing permits herds to increase, and cash being of little use to him, sales are few and irregular, despite the high prices prevailing. The Mines of Northern Rhodesia require 20,000 head of cattle annually for meat rations, and the Belgian Congo consumes 30,000. Whereas ten years ago both the local and the Congo market were wholly supplied from this territory, in the present year only 2,120 head were sent to the Congo; 32,000 were passed in quarantine from Southern Rhodesia to that country, and 5,100 were admitted from N'gamiland to try and meet the demand, which is increasing. The future market for cattle raising seems assured, and residents are urged to develop this industry. The supply of milk is precarious and the mining areas offer a big market for milk products. Despite the growing demand for butter, of which £17,000 worth was imported in eleven months, the operating creamery ceased working. Pig products are in great demand and surprise is expressed that Colonists do not further develop this business.

General.

The Government of Northern Rhodesia is according

active assistance to the stock industry. A sum of £160,000 is to be devoted to equipping a creamery, to the erection of cattle dips and, as loans repayable over long periods, to the importation of stock and for fencing. In addition the Research Station will be provided with a herd for nutritional and genetical investigations, and veterinary propaganda will be accelerated. Thanks to an encouragement of motor transport, officers and stock inspectors can greatly increase their area of efficient work.

R. E. M.

Gold Coast Colony.

The Annual Report on the Veterinary Department for 1929-1930 (Government Printer, Gold Coast), obtainable from the Crown Agents for the Colonies, 4, Millbank, S.W.1, price 2s., is a foolscap publication of 20 pages, with four illustrations of locally-bred improved stock, and a map of the Colony showing trade stock routes, quarantine and immunising camps.

STOCK CENSUS.

No figures are published this year: in 1928 the numbers were stated as follows:—

Cattle.	*Sheep and Goats.*	*Pigs.*	*Equines.*
95,000	350,000	16,250	12,850

STAFF.

The Principal Veterinary Officer, Mr. J. L. Stewart, M.C., M.R.C.V.S., B.SC., is assisted by five Veterinary Officers and one Stock Inspector. There are seven African Veterinary Assistants and a Cattle Patrol force of 62. There was one vacancy for a Veterinary Officer. Mr. Stewart was promoted to his present office during the year in place of Captain W. F. B. Beal, M.R.C.V.S., who retired on pension.

RESEARCH.

The erection of a Laboratory in the Colony has been postponed on account of financial stringency, but authority for the appointment of a Pathologist has been approved. (Subsequent to this Report provision for the erection of the Laboratory has been made, and S. H. Whitworth, M.R.C.V.S., Dr. Vet. Med., is being transferred from Kenya as Pathologist).

This Institute is required for the production of anti-Rinderpest serum and the investigation of many conditions that remain obscure.

DISEASE.

The incidence of rinderpest has been less during the year, a fortunate occurrence, as the supply of serum was limited. This disease occurred in West Africa, for the first time, about 1896. One outbreak occurred in cattle coming by sea from Nigeria; the adjacent French Colonies of Ivory Coast, Haute Volta, and Togoland are regarded as the source of most infection. Three Veterinary Units, consisting of a Veterinary Officer, African Assistants, and Cattle Patrols, were constituted to commence systematic immunising camps and, pending the establishment of the Laboratory, to prepare a field-made serum. Owing to the prevalence of trypanosomiasis, all virus blood is collected in a solution of Antimony potassium tartrate 1:10,000. No results of these activities are yet available.

Pleuro-pneumonia was diagnosed in seven outbreaks. Experiments, following the lines of a long practised native method of vaccination, are being tried as a basis for further improvements. By this method infective lung exudate is inserted over the nasal bones.

Trypanosomiasis.—Of 21 cases in horses, 19 were due to *Tr. vivax* and two to *Tr. brucei*. Treatment with Tartar emetic was successful in nine cases, and six were still under treatment. The species of trypanosomiasis occurring naturally in Zebu cattle is not given, but the disease is met with in animals imported for slaughter, although it does not appear to be of a virulent form. *Tr. vivax* appears to be latent in the West African Shorthorn cattle (a type distinct from the Zebu), but may recrudesce with fatal results when rinderpest infection supervenes.

One outbreak of *Rabies* is reported.

Anthrax, distemper, epizootic lymphangitis, piroplasmosis and streptothricosis occur. One case of tuberculosis was diagnosed in a pig. Caseous lymphadenitis is prevalent among sheep and goats. In poultry, cholera, roup, spirochætosis and fowl-pox were reported. The observation is made that *Argas* is killed by spraying with "Flit," a proprietary preparation.

Helminthiasis.—A list of helminthes identified in England is published.

PUBLIC HEALTH.

Meat inspection was carried out at the Tamale abattoir. *Cysticercus bovis* was detected in 9·6 per cent. and Onchocercosis in 12·9 per cent.

GENETICS.

Improvement in cattle, sheep and goats, pigs and poultry is being carried out.

The native pastoral people, the Fillani, have a sound idea of practical cattle breeding, but the other people, mostly agriculturists, have no knowledge and little interest.

The indigenous Shorthorned cattle possess considerable resistance to trypanosomiasis and transmit some of this to their hybrid offspring.

As the result of experiments carried out during the past ten years, using the West African Shorthorn cows as foundation, the following conclusions are drawn:—

(*a*) Grading with heavy English bulls, *i.e.*, Hereford and beef Shorthorns, has not been a success, the progeny being very susceptible to local enzootic diseases. Experiments with the smaller and hardier dairy herds, as Ayrshire and Kerry, are contemplated.

(*b*) Crossing by Zebu bulls has been a distinct success, the progeny being an improvement on their dams and retaining the resistance to local disease. A number of Zebu and grade Zebu bulls have been issued to approved centres. The best type of Zebu comes from the French Territory of Haute Volta.

(*c*) Selection within the herd is advocated and during the year 2,214 scrub bulls were castrated.

The introduction of Zebu stock has, so far, been successful in the Northern Territories, where it was formerly believed they would not breed or thrive.

Improvement by grading up with superior breeds is arrested by the limit imposed by the dry season grazing: grade cattle cannot survive even optimum natural conditions.

In sheep and goats also experiments with English breeds have failed: those with a local breed are so far successful. Castration is being practised.

The importation of pigs (Large and Middle Whites), and the crossing on the indigenous animal, have been definitely successful.

Breeding experiments with horses have been cut down as being no longer justified.

PASTURES

So long as the conditions of grazing remain as they are it is not expected that an improved type of animal can thrive as well as in the superior grazing of England.

Mineral deficiencies are held probably responsible for malnutrition, sterility and abortion. It is proposed to try the planting of introduced fodder plants.

Ensilage pits have proved a success, and demonstration pits are being made in the cattle areas.

ECONOMICS.

An increased trade in home-reared stock continues: greater numbers of cattle, sheep and goats, and pigs are being marketed as the wants of the owners have increased with the opening up of the country.

IMPORTATIONS.

Cattle to the number of 52,000, 100,000 sheep and goats, and 1,000 horses were imported. These came mostly from adjacent French territories, but supplies from Nigeria are increasing.

Quarantine stations are established to assist this movement in safety, and a tax is collected on each imported animal. This was raised in April, 1930, from 4s. to 6s. for cattle, and from 6d. to 9d. for small stock. The revenue from this tax amounted to over £13,000. Cattle trade routes have been defined, and improved provision for water supply en route is being made.

HIDES AND SKINS.

Improvement in flaying and curing was disappointing, and Veterinary Officers trained 27 butchers during the year. The intrinsic quality of both hides and skins is good, and, with better preparation, the trade will improve: trading firms are, however, too prone to purchase badly prepared goods. Since 1925 the export of hides has increased six times and of goats over four times.

GENERAL.

It has been possible to extend veterinary activities to the Coastal area, where 40,000 cattle live under conditions presenting great possibilities for intensive stock raising. With the assistance of the Geological Survey it is hoped that the water supply will be improved.

A simplified course of instruction for African Assistants, embracing three years, has been substituted, and ten students were in training.

Mr. Stewart emphasises the intimate co-relation of nutritional, genetical, and disease conditions.

R. E. M.

Lubeck Children's Deaths.

GERMAN OFFICIAL REPORT.

The Times Berlin Correspondent, writing to his paper on December 14th, states: "The Reich Health Council took cognizance in a session yesterday of the results of the expert inquiries into the deaths of over 70 infants at Lübeck following prophylactic treatment of tuberculosis by the Calmette method. The investigations have been carried out by the Reich Health Office at Koch Institute, at the German Tuberculosis Research Institute at Hamburg, and at the Pathological Institute of Berlin University.

"In his report Professor Ludwig Lange, of the Reich Health Office, came to the conclusion, with which Professor Neufeld, of Berlin, and Dr. Kirchner, of Hamburg, concurred, that (1) the deaths of infants at Lübeck after anti-tuberculosis treatment were not to be attributed to the Calmette process as such, and (2) it was very probable, indeed, that the admixture of virulent tubercle bacilli with the Calmette cultures was due to a mistake made at Lübeck.

"The Reich Health Office, after a long discussion, decided to reaffirm its resolution of 1927 to the effect that the prophylactic treatment of tuberculosis in human beings has up to now been so little tested either by experiment or statistics that such treatment when living bacilli, even in weakened form, are used, is not to be recommended. The council has asked the Ministry of the Interior to inform the States Governments of its conclusion. In order to guard in future against such occurrences as that at Lübeck the Reich Health Council considers an extension and tightening up of the existing regulations for the production, issue, and employment of vaccines of all kinds to be desirable, and has appointed a commission to prepare recommendations."

Royal College of Veterinary Surgeons.

Membership Examinations, December, 1930.

LIST OF SUCCESSFUL CANDIDATES.

(*Continued from page* 1185.)

LONDON.

Class A.

Ahmad, M. M.	Pitcher, L.
Ashdown, Miss M. G.	Ryan, J. F.
Frost, Ian.	*Thompson, C. C.
Green, P. N. C.	Trevor, S. L.
Lester, L.	Williams, E. P.

Class B.

Ahmad, Munir.	Lewis-Bowen, E. H.
†Brooksbank, N. H.	Mahmoodallah, M.
Campbell, Miss D. R.	Malik, M. S.
Fundaminsky, I.	Salaman, S. C.
Gachet, A. E.	Sherbrooke, D.
Head, C. S.	Slade, Miss A. M.
Hearder, Miss M. I.	West, G. P.
Hernaman-Johnson, Miss K.	

Class C.

Bawa, H. S.	Peyton, G. S.
Jordan, Miss M. G.	Speed, J. G.
Lock, Miss B. L.	Wazir, V. L.
Masson, D. R.	*Pullinger, E. J. (Pathology).
Mehra, H. K.	
Ottaway, C. W.	

Class D.

Catchpole, Miss A. M.	Pullinger, E. J.
Chalmers, G. S. R.	Roushdy, M.
Crosfield, P.	Singh, Bachan.
Crowhurst, J. G.	Strachan, C. G.
Hobday, J. H. N.	Tomlin, G. A.
Mahajan, M. R.	

EDINBURGH.

Class A.

Blyth, N. H.	McLeod, Murdo.
Elphick, T. B.	Smith, J. K.
Fernie, Peter.	

* Denotes First Class Honours.
† Denotes Second Class Honours.

EDINBURGH.

Class B.

Aimer, D. R.
Dalgleish, A. H.
Grant, A. M.
McKinnon, A. S. M.
Misra, U. C.
Robertson, Duncan.
Wilson, R. A. S.

Class C.

Barton, W. F.
Harper, J. D.
Hossack, H. W. J.
Jennings, Sydney.
Mackay, E. M.
McNabb, Thomas.
McVean, Hugh.
Wood, E. G.

Class D.

Boyle, F. T.
Forgrave, Wm.
Leiper, T. W. M.
Shanks, P. L.
Stevens, W. A. S.
Stevenson, A. E.
Stuart, J. E. C.

GLASGOW.

Class A.

Currie, Ronald.
Marfarlane, M. R.
Mackay, K. J.
†MacNab, Edward.
Marshall, Alex.
†Slavin, Daniel.

Class B.

Hamilton, Robert.
Stewart, John.

Class C.

Campbell, Arch.
Gibbs, Adam.
Gillies, Miss L. G.

Class D.

Mossinson, David.
Stewart, J. R.
Walsh, Alex.

LIVERPOOL.

Class A.

†Hepworth, L. D.
†Kelly, Miss K. G.
Stubbs, Miss P.

Class B.

Greenhalgh, R. L.

Class C.

Bennison, J. C.
Burnett, Miss E. A.
Harvey, H. G. L.
Jenkins, E. D.
Morris, J. A.

Class D.

Cautley, P. J.
Crompton, C.
Dudlyke, R.
Sidhom, N. B.

† Denotes Second Class Honours.

Diploma of Veterinary State Medicine.

At the examination held in London for the Diploma of Veterinary State Medicine on December 4th, 1930, the following candidates were declared successful:—

Thomas Johnston; W. Burke McAleer; James D. McLaughlan.

Liverpool B.V.Sc. Examinations.

The following is the University of Liverpool School of Veterinary Science Examination List for December, 1930, in connection with the University Degree of B.V.Sc.:—

SECOND EXAMINATION.—*Part I*: Marginson, J. C.; *Part II*: Marginson, J. C.

THIRD EXAMINATION.—*Part I*: Amos, Vera J. E., Curtis, H.

Royal (Dick) Veterinary College.

Gift of a Silver Gilt Mace.

We reproduce an illustration of a handsome silver gilt Mace, which has been presented to the Royal (Dick) Veterinary College, Edinburgh, by Professor Robert Stewart MacDougall. Following is a description of this beautiful Mace:—

The Mace is made of silver, gilded all over, and measures three feet in length.

The head is hemi-spherical in form, and is richly embossed with thistle ornament on its lower portion, which also serves to separate four circular medallions. These latter are filled respectively with (1) the arms of the Royal (Dick) Veterinary College, Edinburgh; (2) St. Andrew, the patron saint of Scotland; (3) the Lion rampant, Scotland's national emblem, and (4) the inscription, which reads as follows:—

> Presented to the Royal (Dick) Veterinary College by Robert Stewart MacDougall in dear memory of his wife, Eliza H. Stewart MacDougall, 1930.

The upper portion of the head forms the fillet of the crown and consists of a broad raised band of ornament, and above a row of fleur de lis and crosses alternately. From these spring four arches, which are surmounted at their junction by the orb and cross, the whole being an adaptation of the ancient Royal Crown of Scotland, which reposes, with other pieces of the Regalia, in Edinburgh Castle.

The staff of the Mace consists of a plain cylindrical tube divided into two sections and a neckband of two beaded bands and a terminal, each chased above and below with panels of Celtic ornament.

Further evidence of the Scottish character of the design is seen in the four scroll-shaped brackets with unicorns' heads that enrich the neckband.

The Mace is a massive and substantial piece of work. It was designed and constructed by Messrs. Brook & Son, Goldsmiths to His Majesty the King, 87, George Street, Edinburgh.

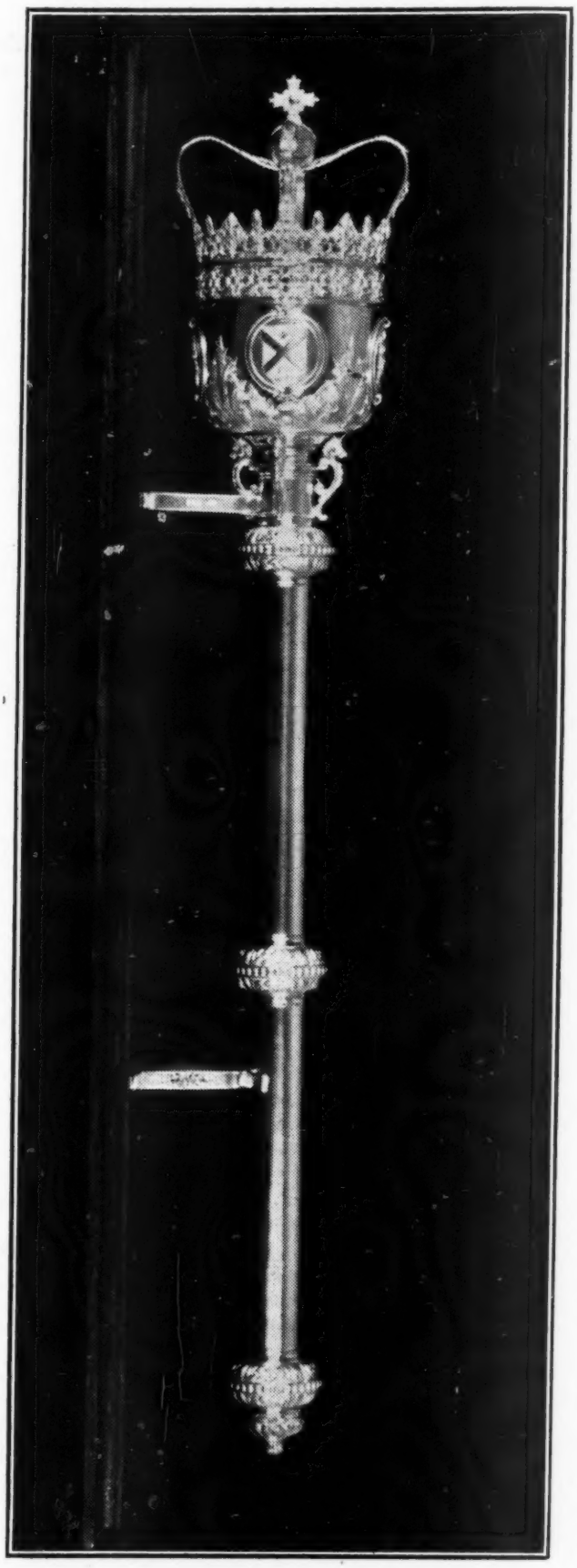
The British Association.

SECTIONAL PRESIDENTS FOR CENTENARY MEETING.

For the centenary meeting of the British Association, to be held in London from September 23rd to 30th next year under the presidency of General Smuts, the following sectional presidents have been appointed:—

Section A (Mathematical and Physical Sciences), Professor Sir J. J. Thomson: B (Chemistry), Brigadier-General Sir Harold Hartley: C (Geology), Professor J. W. Gregory; D (Zoology), Professor E. B. Poulton: E (Geography), Sir Halford Mackinder: F (Economic Science and Statistics), Professor E. Cannan: G (Engineering), Sir J. Alfred Ewing: H (Anthropology), Professor A. R. Radcliffe-Brown; I (Physiology), Dr. H. H. Dale: J (Psychology), Dr. C. S. Myers: K (Botany), Professor T. G. Hill: L (Educational Science), Sir Charles Grant Robertson; M (Agriculture), Sir John Russell.

On Wednesday, September 23rd, the ceremony of installing General Smuts as president of the association and a reception of delegates will be held in the Albert Hall during a private view of the exhibition which is being arranged in connection with the Faraday centenary celebrations, and will be open for this occasion to members of the British Association.



Royal (Dick) Veterinary College Mace.

Clinical and Case Reports.

Traumatic Pericarditis in a Cat.*

By Gertrude Knight, B.V.Sc., M.R.C.V.S., Dorking.

Subject.—Short-haired black neuter cat, four years old and weighing about fourteen pounds.

History.—This was one of the occurrence of two illnesses diagnosed by a veterinary surgeon, six months and three weeks previously, the first as peritonitis, the second as broncho-pneumonia.

Symptoms.—On November 1st, when first seen, the respirations and heart-beat were greatly accelerated, and there were occasional fits of coughing, of a dry, asthmatical nature. The appetite and general condition were good, but any exertion caused great respiratory distress. This condition remained much the same until November 20th, when it was decided to apply the intradermal tuberculin test. During this procedure the subject struggled violently against restraint and was seen to become greatly exhausted. In less than an hour death occurred.

Post-mortem.—I sent the heart and lungs to the Ministry of Agriculture Laboratory, where they were examined, and it was found that pericarditis and endocarditis were present. The cause remained obscure for some time till a section was made of a small papilla-like excrescence on the endocardium near one of the valves, which I had noticed and pointed out. Inside this was a piece of black bristle or whisker which was identified under the microscope and corresponded as nearly as possible to the cat's own whiskers. There was also evidence of an embolus having broken loose and blocked one of the vessels leading from the heart.

I have never heard of traumatic pericarditis in a cat and think it a very rare condition.

A Foreign Body Swallowed by a Dog.

By Henry Taylor, F.R.C.V.S., Haywards Heath.

One frequently hears of dogs swallowing all sorts of foreign bodies, the result of the process varying from an operation to absence of any ill-effect and the subsequent passage of the offending body along with the fæcal matter.

A lady one day missed a small brooch which came from Rouen. It was of base metal, about the size of a shilling, and of pierced workmanship. The pin which held it in position when attached to a dress, was of the full diameter of the object. The brooch probably dropped on the floor when it was hurriedly put into the owner's dress on a certain occasion, but the dog was not suspected of having picked it up and it was simply put down a loss. A few days afterwards the dog—a cocker spaniel—was noticed to go into the garden and eat quantities of bass, *i.e.*, the material which gardeners use to tie up plants. Eleven days after the brooch was missed, the dog passed it in the midst of a bundle of chewed bass. It was discoloured and the pin was not of the full length, above half of it being missing. The dog was not noticed to be any different

* Case presented to the Central Division, N.V.M.A., at the Royal Veterinary College, on December 4th, 1930.

from usual during the time the brooch was finding its way along the alimentary canal, and ate and conducted herself as usual.

I believe doctors prescribe fine cotton, cut into small lengths and partaken of with thick porridge, for the protection of the mucous membrane of the stomach and intestines against sharp objects inadvertently swallowed by patients. The dog, therefore, acted in the prescribed orthodox manner in swallowing the bass with which he cast the offending body, though whether from sagacity, or from a natural impulse, must be left to the fertility and vividness of one's imagination.

An Interesting Submaxillary Abscess in a Cow.

By Henry Taylor, F.R.C.V.S., Haywards Heath.

A cow, in the course of a few days, developed a swelling under the jaw which made the owner suspect wooden tongue, but upon examining the mouth and tongue I could find no lesions of actinomycosis. A few days later there was evidently some deep-rooted pus there, therefore I opened the part and gave vent to some stinking matter, stained with blood, which suggested that the cause was a nail or some such body, which had entered from the mouth. The animal refused all, or nearly all, food for no less than three weeks, when the appearance of other swellings in the parotid region and the fact that the cow was getting weak, made the owner decide to have her killed.

Now comes the interesting part. The knacker, in skinning the neck, found a green line, as thick as one's little finger, extending down the neck to the entrance to the thorax, where it was lost to view until the chest could be opened. Following the usual procedure, the knacker removed first the abdominal viscera and then the thoracic and found that some foreign body had penetrated the reticulum, pierced the lungs, just touched the pericardium (which it had not penetrated) and passed out of the thorax between the two first ribs to travel up the neck to the lower jaw.

At the entrance to the thorax there was a collection of pus which probably accounted for the distress and general condition. The actual foreign body, which one would imagine must have been a nail or a bit of wire, was not discovered; possibly it came away when the abscess was opened.

H.M. Stationery Office Publications.

The undermentioned have been published recently. Copies can be purchased though any bookseller, or directly from H.M. Stationery Office, at the following addresses:—London: Adastral House, Kingsway, W.C.2, and 28, Abingdon Street, S.W.1; Cardiff: 1, St. Andrew's Crescent; Manchester: York Street; Edinburgh: 120, George Street.

House of Lords Papers and Bills:—				
(18a) Improvement of Live Stock (Licensing of Bulls) Bill (H.L.). Amendments to be moved in Committee	0	1	0	1½
House of Commons Bills:—				
Wild Birds Protection (Scotland). To repeal certain enactments providing for the protection of wild birds in Scotland; and to substitute other provisions therefor	0	2	0	2½

Eleventh International Veterinary Congress, London,

August, 1930.

Abridged Papers.

(*Continued from page* 1171.)

The Control of Dissemination of Anthrax by Animal Products.

By Dr. F. Fischoeder,
Director of the Veterinary Department of the Polish Ministry of Agriculture, Warsaw.

The danger of the dissemination of anthrax by animal products has been recognised in Poland, although the importation of such products is still small and only increases slowly.

The import of meat- and bone-meal was only 143 tons in 1925 and rose to 1,847 tons in 1928. Outbreaks of anthrax through these products have been unknown, so that this question is of no special significance for Poland. It is, however, otherwise with regard to hides, for two cases of anthrax in men working in tanneries were proved to have been contracted through consignments imported, one from China *via* Hamburg and Grajewo and the other coming in through Danzig from overseas.

Observations made in Poland over a short period support the opinion of Müssemeier that the danger of imported animal products is a very real one. Owing to lack of experience with regard to the significance of animal fodder and dung, also of bones and wool, I will confine myself to the question of hides.

It is difficult to assess the incidence of anthrax during the war, but as everything was disorganised, many cases must have been missed and probably the available statistics give too low an estimate.

On the question of precautions against anthrax outbreaks, I will confine my remarks to measures that should be taken with respect to the importation of hides. As for the control of anthrax inside a country's boundaries, I will only mention the methods that are in use in Poland, which have served to prevent dissemination from a sporadic case—careful disinfection of the carcass with serum treatment of in-contact animals; in permanently affected districts simultaneous inoculation.

The question of what measures are to be used to prevent anthrax dissemination from imports should only be answered in this manner, "Every country should take care that hides from anthrax-diseased animals are not added to trade traffic and every importing country should only admit hides from other countries when it is convinced that those hides are really from anthrax-free animals." As Müssemeier rightly states (*B.T.W.*, 1929, No. 23) other ways are not available, for it has been found impossible to disinfect hides thoroughly without at the same time damaging them. From my own experiments (*Centralbl. für Bakteriol.*, I. Abt. Orig., Vol. 51, No. 4) I have found that anthrax spores put on a suitable culture medium at a favourable temperature show germination within a few

minutes and that with these changes they lose their resistance to high temperatures and other damaging influences. This fact, however, cannot be put to practical purpose, because these changes do not occur simultaneously in all the spores present; some spores remain unaltered for as long as an hour and, meanwhile, those that changed first are already undergoing sporulation again.

Therefore, importing countries must be assured that hides have come from animals which have been slaughtered under veterinary supervision; that these animals have been inspected *ante-* and *post-mortem* and found to be free from infectious diseases, particularly anthrax; and, further, that the hides have not come into contact with animals infected with or suspected of anthrax or with objects capable of carrying the infection.

Official certificates of undoubted integrity should be employed and exporting countries should make veterinary-police arrangements in sufficient thoroughness to allow the officials concerned to be able to issue such certificates.

Their use can be easily arranged among the European States, but difficulties would arise with large consignments sent to an European port from overseas if they were to be split into smaller lots and sent to several different parts of the continent.

Importing countries in this case should not be satisfied with certificates from the veterinary authority of the port H, which is re-exporting, which certify that the region of the port H is free from contagious diseases. Divisions of the original cargo must be accompanied by certificates of the original exporting country as well as by those of the intermediate port.

On the question of consignments of hides which are not provided with these certificates, or which come from countries whose certificates have proved to be unreliable, such should not be allowed to enter unless they are first tested by Ascoli's precipitation method (as Müssemeier suggests). This should be done by the exporting country and all positive reacting hides excluded from the consignment. I would prefer this regulation to be superfluous, rendered so by the above-mentioned method of an efficient animal examination, but such an arrangement is not possible in every country.

The above-mentioned certificates must be recognised as sufficient for importation from countries whose integrity has not been doubted. If distrust towards an exporting country exists, or if certificates are not produced, then the Ascoli test may be applied and the hides allowed in with certain stipulations.

Müssemeier brings up certain objections to the use of the Ascoli method, namely, that a partial examination does not suffice to find every affected hide, that the Ascoli method is too costly and disturbs the hide and leather trades. He disproves all these objections on more or less sound grounds.

However, the refutation of one of these objections does not appear to me to have been successful: the important one that the Ascoli test is a group test and gives positive results with infections other than anthrax.

I have made searching experiments on the Ascoli method (*Zeitschr. f. Infekt. Krankh. u. Hyg. d. Haustiere*, Vol. 12, Nos. 1 and 2) in association with Ascoli, who gave me serum from his own supply and advised me to employ, in doubtful results, not only the usual concentration but also strongly diluted solutions of serum, and I have worked with dilutions of 1 : 800. My researches have shown that, in cases that are anthrax, an opaque ring is formed even with strongly diluted solutions. It follows from this that the absence of cloudiness is to be considered as negative for anthrax. The formation of a deposit is restricted not only to actual anthrax cases but the opaque ring also occurs in cases where the presence of anthrax is excluded, and moreover, when very dilute solutions are used.

A positive Ascoli reaction cannot then be regarded as a demonstration of anthrax. The use of this test would thus be unfair to the exporting countries when, as Müssemeier declares, the error is likely to be about 22 per cent. Finally, the question arises as to whether hides of animals, which have been inoculated against anthrax, react positively to the Ascoli test and for how long after inoculation.

These doubtful points about the Ascoli test must be cleared up by further research before it is suited to be employed in the international trade in hides.

J. T. E.

Anthrax, the Prevention of its Dissemination by Animal Products.

By Professor Dr. Müssemeier,
Ministerialdirigent im Preussichen Ministerium für Landwirtschaft, Domänen und Forsten, Berlin.

Anthrax is a "soil infection" disease, and, spread from animal to animal, is relatively uncommon. Particular pastures are well known as anthrax areas, and this is referable to the fact that, at one time, an animal, infected with the disease, soiled the ground at this point. The great resistance of anthrax spores to harmful influences renders the sterilisation of such places very difficult.

In animals, ingestion is the common route of infection, but in man, infection *via* the skin plays the big part. Large wounds are not essential for the entry of the bacillus or spore; the massaging of infective material on abraded skin will set up the disease. Such people as wool sorters may receive infection by way of the respiratory tract, but in man the digestive tract plays a negligible rôle.

It has been shown that a very large amount of anthrax-infected material, chiefly spores, must be ingested to set up the disease in animals, whilst only a few germs are necessary to infect man *via* the skin.

Opportunity is given for the taking up of large amounts of infected material when an infected animal is slaughtered, and blood spilled on food, *e.g.*, pasture. In addition, careless autopsies, burial without disinfection, and particularly burial in ground with surface water, give adequate chance for healthy cattle to ingest large numbers of spores. To eliminate these sources of infection, slaughter of infected cattle and their opening must be prohibited.

In addition to the adoption of the hygienic, veterinary public health measures mentioned, the vaccination of cattle against anthrax may be undertaken, but it is to be noted that this latter procedure cannot alone eradicate the disease.

During, and shortly after, the War, the incidence of anthrax greatly decreased in Germany, this being due to the limitation of entrance, from abroad, of animal products. In 1914, the disease was noted in 2,706 pigs; in 1915, in 115; in 1922, in 83; in 1927, in 728, and in 1928, in 1,021. The large number of cases in 1914 is referable to the fact that foodstuff containing insufficiently heated bone meal

was fed to the swine. In cattle, the non-importation of skins produced a marked decrease in outbreaks—4,218 in 1914, 2,077 in 1915, 600 in 1919, and 2,401 in 1928. This is very well marked in Schleswig-Holstein, in which are situated leather works dealing with imported hides. In 1914, 431 cases were reported, in 1919, 24; in 1922, 153; and in 1929, 278.

It is thus evident that, in Germany, animal products are the chief cause of anthrax in man and animals, and that the control of these products is the best means of combatting the disease. Such material as flesh or bone meal, suspected of being infected, may be sterilised. However, the chief source of infection must be assigned to imported animal hides, and exclusively the dried skin. This is shown by the fact that 6,100 imported salted hides were, on examination, found to be free from anthrax bacilli. On the other hand, of 4,072 dried skins examined, 332 were infected. (A table is given in the original article showing the number of hides imported from different countries, and the number found to be infected, *e.g.*, of 15,235 cattle skins from Asiatic countries, 140 were infected, and of 54,889 from South American republics, 560 were infected.)

It is obviously impossible bacteriologically to investigate every dried skin, but the Ascoli precipitation reaction may be employed. This test may be carried out either in the exporting or importing country. It has been shown that the test is specific, cheap, and simple to carry out.

The practical utility of the Ascoli test has been demonstrated in parts of Schleswig-Holstein. This is a low-lying country, and rivers, overflowing their banks, may flood a considerable area of pasture land. Leather works discharge their refuse into these rivers, with the result that anthrax germs are disseminated. In those districts where the test is applied, the death-rate from this disease has fallen, remaining stationary or increasing in other districts where the test is not put into use.

The paper ends with a recommendation—in brief, as follows:—

(1) Precautions should be taken to protect animal and human life against anthrax, caused by animal products, *e.g.*, insufficiently heated meat or bone meal or skins.

(2) Either that the exporting country take measures to ensure that "clean" or sterilised products are sent out, or that the importing country sterilise these products, or ascertain their bacterial content.

(3) To ensure the sterilisation of anthrax-infected products, the action of steam under pressure for several hours is required.

J. H. M.

The International Veterinary Congress.

Dr. Richters (*Zeitschrift für Veterinärkunde*, October, 1930) states that full advantage was taken of the opportunities presented by attendance at Congress of comparing notes with Officers of the R.A.V.C. with regard to questions of organisation, hygiene and control of disease, great appreciation of the organisation and establishment of the German Veterinary Corps being shown by the British.

In this article the author bestows praise on the arrangements, organisation, splendid preparation and "frictionless development of the discussions." He considers, however, that in future at least the conclusions of the reporters should be repeated in Italian and Spanish.

He mentions as striking incidents of the Congress the differences of opinion of Guérin, Ascoli and Watson with regard to the utility of B.C.G., and the signal honour conferred on von Ostertag by the spontaneous tribute paid to him by Leclainche.

Dr. Richters describes in glowing terms the friendliness and hospitality of the British to all participants in the proceedings, with special reference to the enjoyable and instructive trips to Newmarket, Watford and Aldershot.

H. H.

N.V.M.A. Divisional Reports.

Central Division.

Meeting at the Royal Veterinary College.

In view of the conflicting reports current in this country concerning the conditions prevailing in Russia at the present time, the recital of impressions gained at first hand by any visitor is of interest, but this is much enhanced for us when the account is given by a veterinarian and relates primarily to veterinary affairs. It was no matter for surprise, therefore, that the large lecture theatre at the Royal Veterinary College was well filled upon the occasion of the last meeting of the Central Veterinary Society, on Thursday, December 4th, 1930, when Principal F. T. G. Hobday discoursed, with epidiascopic illustrations, on "A Visit to Some of the Veterinary Colleges and Experimental Research Institutes of the United Socialist Soviet Republic (Russia)." Important as was the remaining business—which included a brief but admirably practical Presidential Address from Captain G. Dunlop Martin—it was a matter for regret that, following an able presentation of the reverse side of Principal Hobday's pleasing picture by Dr. Henry Fox (one well qualified, by long residence, to give it) time did not permit of any continuance of the discussion, which had been anticipated by the Fellows with some eagerness.

The Chair was occupied by the President (Captain G. Dunlop Martin) and there were also present Lieut.-Colonel E. C. Argyle, Mr. W. Brown, Captain R. Bryden, Mr. H. E. Bywater, Mr. R. Eaglesham, Captain F. C. Gillard, Principal F. G. Hobday, Mr. H. D. Jones, Mr. D. Johnston, Mr. H. C. P. King, Mr. H. King, Major H. Kirk, Lieut.-Colonel B. L. Lake, Captain W. J. Leyshon, Mr. G. H. Livesey, Captain E. C. Lloyd, Professor J. McCunn, Mr. J. H. Mason, Mr. A. B. Orr, Lieut.-Colonel E. M. Perry, Mr. W. Perryman, Mr. F. Proud, Mr. J. W. Pritchard, Mr. H. L. Roberts, Mr. A. Sillars, Mr. A. W. Stableforth, Captain R. J. Stow, Major J. J. Soutar, Major F. J. Taylor, Dr. R. W. Tuck, Mr. A. S. Watson, Mr. J. Willett, Mr. F. W. Willett, Mr. R. A. Willett, Professor G. H. Wooldridge, Captain W. G. Wragg, Professor J. G. Wright and Captain J. F. Macdonald (Hon. Secretary) together with 42 visitors.

Radiography in the Larger Animals.

The proceedings commenced with a demonstration of radiography as applied to the larger animals—in this

instance, the horse—by Mr. H. J. Ede, Radiographer to the Royal Veterinary College, who used an entirely new mobile X-ray unit specially designed for this class of work.

The demonstrator pointed out that the machine was quite self-contained, generating its own supply of electrical energy, this being independent of any outside source of supply and enabling a wounded animal to be examined in its stall or wherever it might be standing.

On the high tension side the transformer was capable of giving 90,000 volts on peak load, this making the apparatus very rapid in action and almost silent in operation.

By a special arrangement of the tube stand it was possible, said Mr. Ede, to adjust the tube to within a few inches of the ground, whereby pictures of the articular surfaces of the lower limbs could be taken whilst the animal was standing quietly in the normal position.

The demonstrator had for his patient a van horse and obtained excellent pictures of a knee joint in two positions—antero-posterior and lateral—with an exposure of under one second each.

Following an examination of the excellent results of the demonstration, the Fellows proceeded to the large lecture theatre.

The minutes of the June-July meetings of the Division, which had been published in the *Record*, were taken as read and were confirmed and signed.

Correspondence.

(1) From the following Fellows, regretting their inability to attend :—

Dr. F. Bullock, Mr. J. W. McIntosh, Major R. E. Montgomery, Captain S. J. Motton, Mr. J. H. Poles, Captain W. K. Townson.

(2) From Dr. F. Bullock, thanking the Fellows for having elected him an Hon. Fellow.

(3) From Captain H. R. Allen (Cambridge), Professor J. B. Buxton (Cambridge), Dr. T. W. Cameron (Edinburgh), Colonel W. A. Wood (Cambridge), Major F. Hogg, R.A.V.C., Captain S. H. Skelton (Clapton) and Lieut.-Colonel T. Dunlop Young, intimating their desire to resign Fellowship, as they were unable to attend the meetings.

The Hon. Secretary added that he had written to Colonel Young requesting him to reconsider his decision, but had received no reply, and while replies had followed similar requests addressed to Mr. W. S. Gordon, Captain O. S. Broadhurst (Southend) and Lieut.-Colonel J. W. Rainey (Bow), these Fellows all requested that their resignations should stand.

On the proposition of Mr. J. Willett, seconded by Dr. McCunn, it was decided to accept, with regret, all the foregoing resignations.

(4) From Mr. E. Lionel Stroud, thanking the Society for the letter of warm appreciation of his long service as Hon. Treasurer, which had been sent from the Annual Dinner, and expressing his regret at his enforced absence from the function.

(5) From the Secretary, N.V.M.A., informing the Division of the alteration which had been made in the articles of association of the Association, whereby representation of Divisions on the Council of the " National " had been increased to the Hon. Secretary (if any) and one representative to every 35 members or portion thereof.

(6) From the Secretary of the Royal Sanitary Institute, inviting the appointment by the Society of a delegate to attend the next Congress of the Institute, to be held at Glasgow in July.

The meeting unanimously agreed that a delegate be sent and, on the proposition of Mr. J. Willett, seconded by Mr. Bywater, the President, or his nominee, was appointed to represent the Society.

Nominations.—Miss Gertrude Knight (Dorking), Mr. J. W. H. Holmes (Royal Veterinary College), Colonel W. H. Jelbart (Brackley), Mr. R. K. Kent (R.A.V.C.), Mr. R. Machin (Royal Veterinary College), Mr. B. Moss (Woodford Green) and Mr. A. Llewelyn Thomas (London) were nominated as Fellows of the Society.

Elections.—The elections as Fellows of the Society were unanimously made of Mr. L. W. Coulden (Aldershot), Lieut.-Colonel B. L. Lake (London), Major R. E. Montgomery (London), Mr. F. Proud (Staines), Miss M. Stewart (Glasgow), Mr. A. S. Watson (Westcliffe-on-Sea), Mr. G. F. Widden (London) and Captain W. G. Wragg (London).

Royal Sanitary Institute Congress: Delegate's Report.

The President now called upon Mr. H. E. Bywater to present his report in his capacity as the Society's delegate to the Congress of the Royal Sanitary Institute which was held at Margate in June last.

The Report presented by Captain Bywater was as follows :—

" Owing to the inability of Professor Macqueen to attend the Congress of the Royal Sanitary Institute held at Margate from June 21st-28th, 1930, I was invited to represent the Society in his place and herewith I present to you my report of the proceedings :—

" The Inaugural Address was delivered by the Rt. Hon. Lord Cornwallis, who welcomed the delegates to Margate and mentioned *inter alia*, the need for a cleaner milk supply. He stressed the fact that, in the treatment of human tuberculosis, sanatoria have proved of value, but a position had now been reached beyond which advance was impossible by present methods and another line of attack must be found to reinforce sanatoria.

" The veterinary profession was honoured in that the lecture to the Congress was delivered by Professor Charnock Bradley, who took as his subject ' Diseases of Domestic Animals from the Human Angle.' He said that many conditions had brought about the increase in the average length of human life : not the least important of these being the extension of the knowledge and control of animal diseases, and regretted that there existed to-day authorities that had not yet trusted ' the inspection of meat to whose training may reasonably be regarded as having rendered them best fitted to carry it out.' Dr. Bradley pointed out the great economic importance of animal disease, both obvious and obscure, citing the economics involved in meat inspection alone.

He drew attention to veterinary research work, especially that done on ultra-visible viruses, and discussed its relationship with human and plant pathology.

Finally, he discussed the two most important animal diseases from the sanatarians' aspect :—tuberculosis (both avian and bovine) its eradication and immunisation with B.C.G., and epizootic abortion and its relation to undulant fever of man.

" The Section of Veterinary Hygiene, which was exceptionally well attended by veterinarians, medical officers and sanitarians, was under the able presidency of Major-General Sir John Moore, who reviewed the deplorable position with regard to bovine tuberculosis in Great Britain and its relation to the public health, quoting figures obtained under the Tuberculosis Order of 1925, and estimated that at least 40 per cent. of all dairy cows were affected. He drew attention to the work of Dr. Stanley Griffiths and others on tuberculosis and quoted the high incidence of such infection directly attributable to bovine sources. He regretted that such a state of affairs was permitted to exist and urged that measures should be adopted to mitigate it.

" He mentioned the Scheme of the Scottish Branch of the National Veterinary Medical Association for the eradication of Bovine Tuberculosis and, drawing an analogy with glanders, said that bovine tuberculosis could be eradicated if the Government took the necessary action after due enquiry into the position. He concluded by drawing attention to the very high value of milk as a food for children and said that the feeding experiments upon school children in Lanarkshire—now nearing completion—were likely greatly to increase the consumption of milk, in which case, the question of a pure milk supply would be a very pressing one, more especially in country districts where the chance of infection was greatest.

Major Rabagliati read a paper to the Section entitled ' Veterinary Science in Relation to State and Municipal Control.' He said that as a profession we suffered from the fact that the public did not understand our work, nor did it realise the part played by animals and their products in its daily life; as a result, there were many anomalies in our laws, especially with regard to milk and meat. He mentioned the general position concerning animal products and the ambiguity which existed, and asked if it were not time to consider the formation of a State Veterinary Service responsible for all matters of animal husbandry, to work in conjunction with the County and Municipal Services as these Veterinary Services became more general. He reviewed the existing Veterinary Services and the position of this country in relation to animal diseases and said that, although much had been done, very much more was waiting to be accomplished. He dealt at some length with tuberculosis and showed tables which proved the valuable work that can be accomplished in a short space of time in a county such as Yorkshire when a properly organised Veterinary Service is established.

" A paper was read also by Mr. Gofton on ' The Inspection of Food-stuffs, Exclusive of Meat, Milk and Fish,' in which he dealt with conditions mainly applicable to ports and large distributing centres, stressing the need for the hygienic handling of food-stuffs and the necessity for condemnation of otherwise sound food due to external contamination, a point which is obvious to the food inspector trained in bacteriology. Condemnation of food, especially fruit, which, although sound, is unlikely to reach the consumer in such a condition, was also advocated, but one can realise that this policy, although desirable, might lead to some trouble were it indiscriminately adopted in England. Mr. Gofton in his paper made a valuable contribution to the existing knowledge of the inspection of the foods covered by his paper, collecting together many facts from his varied experience and ending with a description of various parasites of cereals. His paper will be filed away, without doubt, by many food inspectors for future reference.

" Both papers gave rise to sustained and interesting discussions from various sections of Public Health workers.

" I attended also the Section of Food Hygiene where the President, Mr. Hal Williams, a recognised authority on abattoir construction, said that hygienic conditions of food preparation were also economic conditions, as had been realised by the big interests, and should be enforced with regard to the smaller traders: he also stressed the lack of knowledge of hygienic principles in the home.

" Owing to the very high hygienic standard practised abroad, much imported food was superior to home produce, in spite of the necessary refrigeration, although personally, I believe due to refrigeration in its broadest sense. He stressed the carelessness which was often displayed in the handling of food during delivery to the consumer, especially with regard to milk, bread and cooked foods, and the lack of protection of meat, etc., whilst displayed for sale. He mentioned also the fact that modern methods were destroying the vitamins in food and the results which were likely to ensue unless measures were taken to remedy this state of affairs.

" A paper on ' Meat Refrigeration ' was given by Mr. Morgan, of the Low Temperature Research Station, Cambridge. He stated that refrigeration was well understood from the engineers' point of view, but this was not so biologically. He emphasised the importance of well resting the animals prior to slaughter and the immediate cooling of carcasses by refrigeration, the latter being a practice not well received by butchers in England. He stated that for the really successful chilling of meat, a drier atmosphere than that normally obtained is desirable, as by this means growth of moulds is prevented; the oxidation of fat, with the accompanying ' twang ' so noticeable in chilled meat, is likely, however, to remain a problem of chilling. The ideal method hygienically is the hard frozen condition, and research has now proved that it is capable of the best results in regard to palatability when used in the form of the rapid brine process so successfully adopted for fish—as was also voiced by the representative for Newfoundland. This process is only applicable to small joints and so the meat must be cut into small joints at the abattoirs, where it can be packed into cartons and transported and retailed in the frozen state.

" It is of interest that, as reported in the *Veterinary Record* of September 6th, 1980, such meat recently arrived at Liverpool from North America and this opens up great possibilities for future competition between Australian and similar Empire meat with that from South America, to the further embarrassment of the home producers.

" Mr. Topping in his Presidential Address to the Sanitary Inspectors' Section, commented on the amount of Public Health work which was but casually done and stressed the fact that, in spite of powers conferred by various Acts and Orders, tuberculous infection and manurial contamination of milk was of high incidence and said that ' the laws with regard to tuberculous cattle and tubercle infected milk are obviously not being fully observed.' He pointed out also the lack of uniformity in the way the Public

Health (Meat) Regulations were being enforced.

"Mr. Culmer read a paper on the 'Essential in Milk Distribution.' He said it was regrettable that no standard existed for milks other than those under the Milk (Special Designations) Order, although much of the milk sold did conform to an acceptable standard. It still falls short, however, of a standard of safety compared with other foods, and this is due often to bad handling. He drew attention to the insanitary condition of many cowsheds, saying that enthusiasm for cleanliness was unlikely from badly paid employees. He mentioned the good results obtained by the practice of paying bonuses to producers of clean milk and urged the more frequent testing of milk for contamination. He also advocated clean milk competitions and the demonstrations of the sediment test to milkers and distributors. He appreciated the use of bottles for milk only, provided they were properly cleansed and sterilised, and said that such extra labour should enhance the price of milk. Finally, he drew attention to the unfairness which existed in the fact that, as there was no standard for ungraded milk, undesirable milk was allowed to be sold at the same price as desirable milk.

"The Congress as a whole was well attended and signs were not lacking that the veterinary profession is at last commencing to take a not insignificant part in Public Health work."

The President observed that he was sure they were all very much indebted to Mr. Bywater for the very great trouble he must have taken in compiling such a very exhaustive report as he had given them, and would like to propose that a very hearty vote of thanks be accorded him. (Applause.)

Dr. McCunn seconded the proposition, remarking that, in his opinion, Mr. Bywater's report was the best account of the proceedings of the Royal Sanitary Institute Congress which had ever been presented to the Society.

The proposition was supported by Professor Wooldridge and carried with acclamation.

Morbid Specimens.

Major Kirk said that he brought a portion of invaginated bowel, removed from a greyhound. Except that it was a good specimen there was nothing remarkable about it, but his reason for exhibiting it was in order to discuss the etiology of the condition.

The greyhound was a very good jumper; she was in a trial on the preceding Monday morning and made beautiful jumps all through the race, which she won. On the following day she was not well, but as the speaker was out of town he did not see her until after she had died on the Wednesday.

On *post-mortem* all the appearances presented were those of hæmorrhagic enteritis, but on searching further be found that invagination, which he had no hesitation in saying was the cause of death—but what had produced the invagination? All text books on the subject of invagination ascribed the cause to violent peristalsis set up by indigestion, or the ingestion of foreign bodies or all sorts of filth, or to worms, but nobody appeared really to have nailed down the cause. That case seemed to have followed very rapidly upon high jumping, and he was wondering whether the jumping could have produced a strain and if that was the cause of death.

In connection with another case which he desired to bring to their notice, he had been in correspondence with Miss Gertrude Knight, M.R.C.V.S., of Dorking, the subject being a cat which she had been attending.

Miss Knight had written a short résumé of the case, which was one of traumatic pericarditis, because she could not be present at that meeting herself. [This case is described in our Clinical Section this week.—Ed.]

Captain R. J. Stow exhibited a large tumour which he had removed, on *post-mortem,* from a terrier. The man who brought in the dog suggested that it might be suffering from a stoppage. (Laughter.) On opening the animal he found that enormous tumour, which weighed almost as much as the dog itself. He was unaware of the nature of the tumour, and he proposed to leave it at the Pathological Laboratory of the College for examination. It was attached partly to the bowel and partly to the omentum. the dog was about eight years old, and had been going back in condition and growing larger in the abdomen, for about six months.

Mr. H. L. Roberts exhibited the hoof of a hunter, which was pulled off the limb as the result of an accident. He did not bring that specimen forward because of its rarity or because it was of any particular interest; he understood that in railway practice it was a common thing for a horse to pull off a hoof between the points of a railway track, but, as a country practitioner, he might say that he had not had an opportunity recently of witnessing an accident of that description, and for this reason: only recently had the heavy motor lorry with solid tyres come onto their country roads in such great numbers as it had during the last few seasons, when beet sugar was being conveyed to the factories.

That was an off-hind hoof, and their information was that, when a lorry of the type he had described was passing the horse, the rear portion skidded against the outside quarter of the wall of the horse's hoof, simultaneously fixing the shoe to the ground. At the same time, the horse pulled his limb away from the hoof. He was enabled to do that the more easily, the speaker thought, because, as they were all aware, the hunter shoe was blind-sided on the inside, and that facilitated the inside heel penetrating to the bones of the foot and acting as a lever, lifting the limb away from the hoof.

The accident happened just over a year ago, and the case was the subject of two hearings at the Suffolk Assizes. He happened to be the veterinary surgeon for the plaintiff, and he saw the horse just after the accident and had him destroyed.

As he had said, it was unusual to get such an accident in country practice, but in picking up the *East Anglian Daily Times* that day, he saw a similar case, a pony and a motor lorry having come into collision at Bury St. Edmunds' market the previous day. That pony's hoof was pulled off, in a similar manner to the case he had detailed to them. After two judges, two juries and two K.C.'s had dealt with his case, plaintiff was awarded £250 damages and costs on the higher scale. That carried with it the feeling that his (Mr. Roberts') opinion and their decision were correct, and had established a precedent for any similar instance which might occur wherever there was a lot of heavy motor traffic, where the lorries were fitted with solid rubber tyres.

Major Kirk observed that it occurred to him, when Mr. Roberts said that the plaintiff was awarded £250 for the

loss of that horse, whether the defence could not have said "Why did the veterinary surgeon destroy the horse"? A horse could grow a new hoof in nine months, and it would have cost far less than £250 to keep that horse in idleness for nine months. He had seen several of these cases in the London streets, when he had been called by the police to accidents, and in every case he had made a point of getting in touch with the owner before he would destroy the horse. If an injury was curable, it seemed to him only right to obtain an owner's consent before destroying his property.

A Fellow remarked that, while this injury was by no means uncommon, in town practice this particular case (of Mr. Roberts') was one in which he would have no hesitation in destroying the animal.

Captain F. C. Gillard said that, as it was suggested that the accident was somewhat rare, he would like to add one more case, which occurred in his own practice, in which a hunter shied at an on-coming motor-conveyance —quite a light lorry—with solid tyres. The same accident occurred, and there was a great deal of damage done to the sensitive laminæ, as well.

Captain R. J. Stow said that he had only once seen tearing off of the hoof, when an animal had both shoes torn off by a motor lorry, though how it managed to get both feet under the wheels he never knew.

Dr. J. McCunn said that when Mr. Roberts was reciting his case he was reminded of one they had at the College. In this case—the subject was a racing pony—a motor lorry came along the road, wedged the pony's hoof, and tore it off. There was the same crack in the hoof as in that shown by Mr. Roberts; the only difference was that the latter's case was complicated by fracture, whereas in this instance there was no fracture. The insurance company involved paid up, and the horse was ordered to be destroyed, but during the time it was kept, the horn of the hoof was growing rapidly, though it appeared that the hoof would have been so deformed that the animal would have been of negligible value.

Presidential Address.

The President (Captain G. Dunlop Martin): Following on the *post-mortem* specimens, you will note the item on the agenda "Presidential Address." I have the temerity, in this, my year of office, not to follow the stereotyped method, adopted by all presidents I have heard, of giving a synopsis of progress during the past year (the devotion of a whole evening to such being, in my opinion, more or less waste of time) but I thought I might raise one or two questions for your discussion and interest.

One matter about which I wanted to speak to you was with regard to whether any of you had had any experience of deep X-ray therapy in the treatment of new growths. A very interesting case came to me for treatment some time ago. The subject was a wire-haired Fox terrier bitch, eight years old. He had an epithelioma on the left side of his lip, under the nose, with secondary enlargement of the submaxillary glands on that side. I got a friend of mine, Mr. Philip Turner, one of the surgeons at Guy's, to look at it with me. He agreed with my diagnosis, and said he could only suggest deep X-ray therapy. He introduced me to Dr. Watt, of Guy's, and the latter treated the gland in the neck first, with 25 minutes' exposure twice, while the lip was subsequently given two exposures of the same duration. The voltage used was *222,000* volts. The subjective feeling was interesting, too, because when I was holding the dog, and the current was turned on, it was as if a cobweb was falling over one's head.

With regard to the case, after the second treatment of the submaxillary gland, Dr. Watt suggested the gland might be removed, and this was done. There was some trouble with secondary hæmorrhage, but the wound cicatrised all right. At that time, too, the original trouble in the lip seemed to be improving, but eventually improvement ceased and the dog was destroyed.

Then I have had a case of a cyclops Siamese twin kitten, the mother being a black short-haired cat, seven years old, which had had several litters. She had never before had more than three kittens to the litter, but on this occasion she had six—one alive only about 10 hours before I saw her. I visited the cat and found this monstrosity presenting: the hind legs were just in the pelvis, and after considerable trouble this monstrosity was delivered. She had three others, with a little assistance, afterwards, and eventually did very well indeed.

Personally, I have not heard of or seen a case of this cyclops condition in the cat, or of a Siamese twin.

This other case I have brought up for your notice is a uterus and vagina from an eleven-year-old Fox terrier bitch. I was rung up in a hurry one Sunday morning and asked to go and see this bitch, about 20 miles away. When I got there I found that the animal had been treated by another veterinary surgeon for some weeks previously. She had shown some vaginal discharge, on and off, for the previous two years. The discharge had increased within the last three weeks, and for the last two weeks she had been receiving daily injections of iodized normal saline. On each occasion up to the Saturday (I saw her on the Sunday) the injections had been returned. On the Saturday she offered considerable resistance and the injection was not returned, and shortly after the injection she collapsed. When I saw the bitch she was obviously dying.

The abdominal wall was tense, and there were all the signs of acute peritonitis. The bitch died later in the day. On sectioning the abdominal wall, I found the abdomen full of blood-stained fluid. There was a small rupture on the floor of the vagina, just anterior to the meatus urinarius. The interesting point to me was that the owner assured me that, in making the injections, nothing had been used but the small bore rectal pipe on a Higginson's enema. I would have considered it impossible to cause such a rupture with that instrument.

I hope you will forgive me for not giving you anything more than this for a Presidential Address, but I thought it would be more useful than just reciting a certain number of platitudes. (Applause.)

Major F. J. Taylor said, in reference to the President's case of epithelioma of the dog, he had recently a case of epithelioma in the throat of a cat. The animal presented all the usual symptoms of acute laryngitis and glandular enlargement. The treatment he adopted was not successful in relieving the condition, and gradually the lesion became a circumscribed and localised patch, with a definite crater round the soft granulating wound in the mucous membrane, and it reminded him macroscopically of lesions of epithelioma on various parts of the external body, mouth, lips, etc., and as illustrated in Hobday's Surgery, page 133, fig. 103. He

took the cat to the pathological laboratory in Oxford, where the animal was destroyed and a scraping and section were taken from the back of the throat. It was determined by the very efficient staff at the School that the lesion was one of epithelioma.

On enquiring into the history of the cat, he found that it belonged to a bedridden old lady, who had the cot on her bed and frequently fed it with her own food, and the condition had apparently been transferred from the patient to the cat's throat in this manner. She was taken to hospital for operation to remove an epithelioma from her throat at the time the cat was brought to him. The case was interesting to the staff of the Pathological Section, because they had never previously definitely traced the contagion which exists between man and animal in regard to epithelioma as this particular case seemed to substantiate, and he vouched for the correctness of the facts stated.

Dr. McCunn observed that he had seen a similar case in the dog. He thought, at the time, that that was a definite case of transmission from human to animal, but when one came to investigate such cases he thought they must rule out such a suggestion, because they must remember that in epithelioma of the cat and the dog one of the commonest places in which it was found was the throat or in the region of the pharyynx, and therefore coincidence could not be overlooked.

Mr. G. H. Livesey observed that Dr. Murray on many occasions had said that they had proved to their own satisfaction that there was no communicability between man and animal in regard to epithelioma.

Concerning deep X-ray therapy, he would like to have some explanation as to why, in the President's case, the operator chose the submaxillary gland to which to apply the first treatment rather than to the primary lesion on the lip; at first sight one would think that it would be better to tackle the primary lesion first and leave the damaged gland to go on trapping any infection that was travelling along the lymphatic system.

With regard to cyclops, he had seen kittens with six legs and such other abnormalities: the interesting point to him was, apart from the abnormality, how the President managed to deliver it: if he had to use any instrument and, if so, what, and if there was much pulling about of the mother. The fact that the cat was a mature animal of several litters would, of course, make matters easier for her.

Professor G. H. Wooldridge took exception to the conclusion drawn by Major Taylor in regard to the transmission of epithelioma from the human subject to the cat and *vice versa*. As Dr. McCunn had pointed out, coincidence could not be ruled out. He thought it would be a great pity if it were to go out from that meeting that it had been definitely established or accepted that carcinoma or epithelioma was directly transmissible from the human being to the cat. (Applause.)

With regard to Mr. Roberts' case, most of the practitioners who had had cases of that kind had never given the horse a chance. Almost the whole hoof, both wall and sole, under different conditions, had been stripped off for surgical purposes, yet one could get a good hoof following. Perhaps from the economic aspect of the case slaughter was sometimes the right procedure, which could also be argued from the humanitarian aspect, but he was not quite sure that they were right in destroying these cases when the animal concerned was of considerable value, and unless the structures had definitely been badly damaged he thought they should be given a chance.

Captain Stow's case was a very interesting one, too. If he (Professor Wooldridge) had examined the case in the living animal he should have suspected the spleen, but here the spleen was clean and the tumour seemed to be involving the lymphatic glands.

The President, replying to Mr. Livesey's remarks on the cyclops kitten, said that the mother-cat was certainly rather exhausted when he saw her, but it was extraordinary what a beneficial effect a teaspoonful of gin in milk had—(laughter)—and after the administration of this, and the use of the small (Hobday's) forceps and considerable traction, the kitten came away. The mother was quite herself next morning.

With regard to the question as to why the gland was treated first in the terrier, he understood from Dr. Watt, the expert, that the idea was to block the lymphatic channels by this procedure. Mr. Watson, who made a *post-mortem*, said that the mediastinal glands were the size of a large apple and that there were obvious signs of infection in every gland in the body. That was six weeks after the last application of the deep X-ray.

Proceeding, the President said that he would invite their attention to the fact that they had several distinguished visitors there that night. He would mention Dr. Alastair MacGregor, who was very well known in London, and at the Royal Society of Medicine—particularly to the Section of Electro-therapeutics. (Applause.) They also had with them Dr. Tuck, the representative of the United States in veterinary matters in London. (Applause.) They were also delighted to see with them their old friend, Mr. Woods—(Applause)—who might be described as the Father of the Examining Board. (Laughter.) They had with them also a very good sportsman in another old friend, Mr. J. F. Healy, of Middleton, Co. Cork. (Applause.) He well remembered having the pleasure of meeting him at the Dublin Show in 1903. They were also glad to welcome Mr. Henry Fox, who had kindly come to open the discussion on Principal Hobday's paper. (Applause.) Dr. Fox was a Graduate in Medicine of Kharkov University and also a Graduate of the Royal College, who was now second officer at the Bureau of Animal Health.

Obituary.—The President now observed that they had lost, in the person of Mr. James Rowe, the Society's very oldest member, and one, moreover, who had occupied the positions of President and Hon. Secretary, while he also served the "Central" for many years as its Hon. Treasurer. Mr. Rowe was actually a founder member and was most regular in his attendance. They would all desire to mark their sense of loss in the usual way. The Fellows stood for some moments in silent tribute.

Paper.—The President now called upon Principal F. T. G. Hobday to give his paper, illustrated by the epidiascope on "A Visit to Some of the Veterinary Colleges and Experimental Research Institutes of the United Socialist Soviet Republic (Russia)."

Principal Hobday's paper was followed with the liveliest interest, as was the subsequent contribution (the only one for which time allowed), in discussion, made by Dr.

Henry Fox. [Both these appear in this issue of the *Record*.—Ed.]

The interest of the address was enhanced by the display of a selection of striking picture posters, which are prepared by the Government of the U.S.S.R. specially for the benefit of the peasants, and are placarded broadcast in that country, and which may also be purchased by them from the Government Stationery Stores. These posters are utilised as a means of familiarising the peasants—the vast majority of whom are illiterate—with the appearance presented by animals stricken with diseases of various types, in order that they may lose no time in seeking professional aid. The pictures shown on the screen by means of the epidiascope were also most informative as showing what may be accomplished when the Government of a country has achieved a realisation of the importance of veterinary science in the life of an agricultural nation. The buildings and equipment shown pointed a moral for our own country which Principal Hobday did not neglect to emphasise.

The display of pictures was terminated, in timely fashion, by a photograph of that splendid old servant of the College, Henry Dillon, recently retired, and the opportunity was taken to appeal for support for the testimonial fund now being raised on his behalf. The pleasing result was a noteworthy augmentation of the amount of the Fund, achieved by means of a collecting box.

The President now rose to say that he was sure they would all agree that they had had a most instructive talk from Principal Hobday on various phases of his visit to Russia, and that they owed him a great debt for so kindly talking to them as he had done, and for the interesting evening he had given them.

Mr. J. Willett seconded the proposition, which was carried with acclamation. A hearty vote of thanks was also accorded Dr. Fox for his valuable contribution, while similar tributes were paid to Mr. Southern, the epidiascope operator, and those who had brought forward *post-mortem* specimens and had related interesting cases, and to the President for his conduct of the meeting.

J. F. Macdonald, *Hon. Secretary.*

Scottish Metropolitan Division.*

Meeting at Edinburgh.

A meeting of the above Division was held in the Royal (Dick) Veterinary College, Edinburgh, on Wednesday, April 23rd, 1930, at 2.30 p.m. The President, Mr. W. Nairn, occupied the Chair, and the following gentlemen signed the Attendance Book:

Members.—Dr. T. W. M. Cameron, Professors R. G. Linton, W. M. Mitchell, and G. F. Boddie, Principal O. Charnock Bradley, Messrs. J. Henderson, T. M. Inglis, W. S. Lornie, J. N. Ritchie, E. Brown, J. Ker, W. P. Blount, W. Scott, P. Fisher, J. P. Walker, Major Graham Williamson, Professor J. R. Greig, Messrs. A. Brownlee, H. M. Wilson, and the Hon. Secretary (Mr. W. C. Miller).

Visitors.—Messrs. O. Stinson, E. F. Peck, W. S. Davidson, J. D. McLaughlan, G. Strachan, W. Gray, W. A. Stevens, T. W. M. Leiper, W. G. Rorunson, N. Macdonald, R. H. Robertson, F. A. Gordon, R. McNeil, J. Omand, G. N. Sutherland, and J. R. Innes.

*Received on November 26th.

The Minutes of the previous meeting were read, approved and signed by the President. Apologies for absence were intimated from Mr. A. Gofton, Major J. G. McGregor, Messrs. E. J. H. Sewell, H. Begg and J. Aitken.

Election of Hon. Fellow.—A letter was read from Mr. J. Aitken, of Dalkeith, one of the very few surviving Founder-members, announcing his desire to resign from membership. It was recommended by the Council that Mr. Aitken's resignation be not accepted, but that he be elected to Honorary Fellowship of the Division, and that a letter be sent to him expressing the good wishes of the Division, and thanking him for his past services as an ordinary member and also as an Office-bearer. This was unanimously and heartily endorsed by the General Meeting.

Correspondence.—A letter was read from Mr. W. A. Pool, intimating his desire to resign from membership. The Council recommended that Mr. Pool's resignation be accepted with regret. A similar letter was read from Mr. H. Begg, who desired to resign owing to the difficulty he experienced in getting to meetings in Edinburgh. Mr. Begg's resignation was accepted with regret.

Election of New Members.—The Secretary read the list of gentlemen who had been proposed for membership at the last meeting, whose election to membership the Council recommended, as follows: Messrs. A. Spreull (Junr.), Dundee; D. R. Wilson, Moredun; W. Scott, City Veterinary Department; C. B. Davidson, Royal (Dick) Veterinary College; and Dr. T. W. M. Cameron, Edinburgh University.

On the motion of Mr. H. M. Wilson, seconded by Mr. Fisher, these gentlemen were duly elected.

Representation of Scotland on Council, R.C.V.S. Professor Linton raised the question of the inadequate representation of Scotland on the Council of the Royal College. He intimated that the Division was fortunate in having been able to persuade Mr. Nairn, their President, and Mr. Andrew Spreull, of Dundee, two gentlemen whom he thought every practitioner in Scotland and very many in England knew and honoured, to offer themselves for election. He stressed the very great importance of making every endeavour to ensure that the two Scottish representatives be elected, so that the Northern members of the profession might have a stronger representation on the Council of the R.C.V.S.

Paper.—The President then very briefly introduced Mr. O. Stinson, of Appleby, a gentleman whose name, he said, would be familiar to all of them and whom many would remember having met at Blairgowrie last summer. He welcomed Mr. Stinson in the name of the members and was sure they would listen with great interest to what he had to say about "Grass Disease and Related Conditions," with the clinical aspect of which they were mostly only too familiar. He called upon Mr. Stinson to read his paper. [Mr. Stinson's paper and the discussion upon it, together with his reply, appear earlier in this issue of the *Record*.—Ed.]

Vote of Thanks.—The President said he was sure they had all had a most enjoyable afternoon. While Mr. Stinson had been somewhat severely dealt with, he thought they should remember that he might be nearer the truth that some of them imagined. Mr. Stinson possessed the advantage of living at a distance from Scotland—or was it

Review.

["**Agricultural Research in 1929.**" Royal Agricultural Society of England. 182 pages. Obtainable by application to the Secretary of the Society at 16 Bedford Square, London, W.C.1. Price 1s. 3d. Post free.]

The fifth volume of this annual summary of scientific and economic research work in agriculture, covering investigations conducted not only at home but abroad, in so far as colonial and foreign results are of interest to agriculturists in this country, has now been issued. Started as an experiment five years ago at the instance of the Research Committee of the Royal Agricultural Society, the publication has now established for itself a definite place in the periodical literature of agriculture.

There was an obvious need for a work of this sort. The farmer must ever be at a disadvantage in endeavouring to translate into practice the results of scientific research connected with his business, for the two-fold reason that these results are often set out in language which is not readily understood by him and are scattered in various technical journals to which he has not access. This annual publication of the Royal Agricultural Society is a serious attempt to fill this gap. Written in non-scientific language, it provides a large amount of up-to-date information of direct value, dealing with various branches of agricultural industry. In the present volume the subjects treated are as follows: Crops and Plant Breeding, by Professor F. L. Engledow; Dairy Husbandry, by Mr. J. Mackintosh; Agricultural Economics, by Mr. C. S. Orwin; Agricultural Engineering, by Dr. B. J. Owen; Animal Nutrition, by Dr. C. Crowther; Soils and Fertilisers, by Sir E. J. Russell.

Veterinarians will be chiefly interested in the review of diseases of the farm animals. In the first four volumes the articles on Veterinary Science were contributed by Sir John M'Fadyean. The section on this subject in the present volume, which is compiled by Dr. F. C. Minett, deals with the following:—

i. Bovine Contagious Abortion:—

The distribution in nature of the bacillus of contagious abortion.

The control of contagious bovine abortion.

ii. Tuberculosis:—

Progress of eradication schemes in the United States and in Canada.

Tuberculosis in swine.

Tuberculosis in poultry.

iii. Fowl-pox:—

Control of the disease by vaccination.

iv. Canine Distemper.

v. The Warble Fly.

For the assistance of students and others desirous of consulting original sources of information, each section of *Agricultural Research* concludes with a complete bibliography of papers quoted. The Royal Agricultural Society, it should also be noted, is continuing the sale of the volume at the reduced price of 1s. 3d. post free, in order to secure the widest possible circulation. To members of the Society it will be sent free on application.

---

a disadvantage—so far as grass disease was concerned, and it always did them good to hear views which were new and untramelled by the current beliefs on the north side of the Border. They had also listened with great interest to the able remarks of Mr. Peck, and he would ask them to include him in the very hearty vote of thanks he proposed to Mr. Stinson.

The members expressed their appreciation of Mr. Stinson's effort by according him an exceedingly hearty vote of thanks.

Mr. Stinson said it had been a great honour to be invited to come and speak to them and he also had enjoyed the afternoon very much. He hoped they had all learned at least something of use to them; at all events, he himself had done so. He thanked them for the way they had received his paper.

A hearty vote of thanks was accorded Mr. Nairn for his conduct of the meeting.

Mr. Gordon, at the close of the meeting, made an appeal to all Graduates who could possibly do so to attend the Royal (Dick) College Dinner on May 9th, 1930, when it was proposed to form a College Aluminus Association. Further particulars could be obtained from the Principal.

This terminated the meeting.

Wm. C. Miller, *Hon. Secretary.*

Horse Society Meetings.

National Horse Association of Great Britain.

At the December Council Meeting of this Association, Lieut.-Colonel Sir Archibald Weigall (President) commenced the proceedings by presenting the Gold Bravery Medal and Merit Certificate to Police-Constable William D. Sinclair for conspicuous gallantry in rescuing, under difficult circumstances, three horses from a locked burning stable at Leyton; and a Merit Certificate to Mounted Police-Constable Thomas A. Rennie for bravery in stopping a runaway horse while the Brixton Road was crowded with vehicles, thereby displaying exceptional gallantry and a fine display of horsemanship.

Horses in London.—The Council then considered the recent notice in the press that horses might be debarred from proceeding along various London streets, together with the reply received in response to questions asked in the House of Commons, and unanimously adopted the following resolution:—

"The Council of the National Horse Association of Great Britain, on behalf of the 94 horse-owning and breeding Societies associated with its work, protests most strongly against any proposal to restrict the use of horse traffic in certain streets in London.

"A very serious blow would be dealt to the horse breeding and farming industry generally, consequent upon inability to dispose of young stock, while such proposals would doubtless lead to the dismissal of many transport employees who have not the required knowledge to handle mechanical transport, and at the present time would doubtless have considerable difficulty in securing other employment, while it would mean that hundreds of small traders would be unable to use the horse; which is not only their best but only possible form of transport."

Road Transport Bill.—The contents of this Bill, as affecting horse owners and users, were considered, and reference was made to the letter received from the Minister of Transport on July 7th, who intimated that "He would give careful consideration to the suggestions of the Association when the Highway Code is in course of preparation, and will bear in mind the offer to arrange for representatives to discuss the subject with him." No further communication had been received, and the matter was referred to the Parliamentary Committee.

Parliamentary Committee.—The Council then resolved that a Committee should be appointed to consider at once all Bills presented before Parliament which affected the horse owner and breeder in any way.

Publicity—Sir John Moore reported that, at the request of the Council, he had prepared an article entitled "The Horse and his Economic Usage" and that some 500 copies had been issued that week, while it was further proposed to circularise 6,000 copies gratis to all interested in Horse Transport. [This article will be reproduced in an early issue of the *Record*.—Ed.]

The Association had carefully gone into comparative costings and were of the opinion that the horse for short distance work was undoubtedly the cheapest form of transport, as proved by the statistical figures supplied by leading transport firms.

The Chairman also reported that it was proposed to issue a quarterly calender which would give those interested dates of the principal races, shows and other functions connected with the horse.

Medal Schemes.—Lieut.-Colonel Percy Laurie reported that during the past show season the Association had awarded 41 Silver Medals at country shows for the best Child's pony exhibited in the Children's Pony Classes. With the object of encouraging good shoeing—which the Council considered was most essential at the present time—10 Silver Medals for the best-fitted shoe had been awarded in Shoeing Competitions at National Shows, and they proposed to further extend this offer to other shows in 1931.

Bravery Medals.—Colonel Laurie further reported that the scheme for recognising bravery displayed in saving or attempting to save the life of horses or ponies had proved highly successful, calling forth the approval of all horse lovers. During 1931, three Gold Medals, three Silver Medals and five Merit Certificates had been awarded out of the many cases submitted, as the Committee were strongly of the opinion that recognition should only be granted in cases where exceptional gallantry had been displayed, thus making the medals and certificates of considerable value to the recipients. Four further reported cases of gallantry were being investigated, and the decision of the Committee would be announced later. Co-operation with the R.S.P.C.A. in making these awards was discussed and approved, thus avoiding duplication of awards to horse-saving heroes.

Finance.—Five new candidates were elected members of the Association, and Mr. Cecil G. Argles, in making an appeal for further support from all interested in the horse, said that it could be confidentially stated that the Association was now the recognised horse authority in the country on all matters affecting horses generally. Subcriptions had increased by some £100, but the extending work had resulted in a considerably increased expenditure, so that the Association's expenditure and income account for the year would only just balance, while the proposed schemes in 1931 for the encouragement of the horse would result in even larger expenditure. Mr. Argles therefore hoped that all interested in the horse would rally to the support of the Association.

Future Meetings.—It was resolved that the Annual General Meeting of Members should be held on Tuesday, March 31st, at which it was hoped that a large attendance of members would be present, while the Council would meet on March 31st, June 15th, October 23rd, and December 10th.

. . . . .

The National Pony Society.

At a meeting of the Council of the National Pony Society held on November 28th, it was agreed that the 32nd London Show should be held at the Royal Agricultural Hall, Islington, London, on Friday and Saturday, March 6th and 7th, 1931, and a Schedule with prize money amounting to £1,280 was passed for issue.

The 52 classes offered will provide facilities for the exhibition of all types of ponies, breeding and riding Polo Ponies, Shetland, Welsh, and all Mountain and Moorland Ponies, Children's Riding and Handy Pony Classes, with Competitions and Jumping Classes on each day.

Stud Book.—It was reported that Volume 20 of the National Pony Stud Book was now on the point of issue, and would be sent to all members early in the new year. This volume contains 757 entries, and includes sections giving the pedigree of Polo Dales, Dartmoor, Exmoor, Fell, Highland, New Forest and Welsh ponies, together with statistical tables of value to breeders. The 1930 Supplement of young ponies will be issued at the same time.

A Field for Biology.

The Needs of the Tropics.

By Professor Julian S. Huxley.

The following is an abstract of an article which appeared in *The Times* of November 28th, 1930.

Biology has still to most people a somewhat *outré* connotation. As a school subject it calls up visions of a few eccentric boys dissecting worms, frogs, and other "types," making drawings of rabbits' bones, messing about with pickled specimens of odd appearance in a strong atmosphere of spirits, and looking through microscopes at the inhabitants of drops of dirty water. As a pure science it is often thought of either as a wilderness of monkeys and other organisms plastered over with Latin names, or as an elaborate system of knowledge and jargon concerned with a comparison of the more useless attributes of the more exotic animals and plants. Even in the sphere of evolution, where it has touched the popular imagination, there is plenty of misconception.

Biology is now no longer a group of subjects, but one closely knit and unified subject in which advance in any one branch means advance in every other. The working of animals and plants, their chemistry and their classification, their present distribution and past evolution, their individual development and their natural history in the field, their sexuality, their heredity, and their diseases—all are part of the one discipline.

In Africa this need for biological knowledge thrusts itself forcibly upon you; you cannot escape from biology. Here, for instance, is an area as big as Great Britain which is closed to human settlement because of tsetse-fly killing all the cattle; here is another, not quite so big, but big enough, in which other tsetse-flies are giving sleeping sickness to human beings. Some of the best grazing country is unavailable because of ticks which spread deadly disease. Without a knowledge of these creatures' life-history and habits you will never be able to throw open such areas to cattle—and so relieve the pressure on the over-grazed tick-free areas where grass has been browsed away to nothing and the bare earth is showing. The most careful studies are needed to tell us whether some native methods of agriculture are not better suited than ours to the peculiar conditions of the tropics. Native crops and native beasts have their merits; to raise them to their full possibilities, instead of merely importing other crops and other creatures, hit or miss, from other countries, is a pressing task.

What might you not do with the wild animals of the country? The patience and enthusiasm of the Belgians have demonstrated that the untameableness of the African elephant was a myth. But why can we not domesticate the zebra and the eland? Both are immune from tsetse; the zebra could take the place of the horse, the eland of the ox (in passing, elands are about twice the weight of good native cattle). People will tell you that the experiment has been tried; that the zebra is intractable, and that the eland, though readily tamed, has hooves too small to be of use as a draught animal. But to modern genetics these are inconclusive objections. Given a well-endowed and permanent research institution, in which research could be pursued for generations, it should be readily possible through selective breeding to modify the zebra's temperament and the eland's toes.

The Question of Game.

Then preventive medicine in Africa is largely a matter of biology. Intestinal worms and malaria—every native has one or the other (or both); if you could clear them out of the majority of the population you would have a new Africa, with a new outlook and new possibilities. Biology has given us the life-history of the hook-worm and the malarial parasite; it remains to apply the knowledge. (True that the application in practice is not simple, but without that biological knowledge we would be wholly impotent.)

Again, there is the game question. Game in East Africa is already important as a financial asset, and will become increasingly so as more people come from all over the world to see the unique spectacle. Yet some would have the game destroyed as carriers of sleeping sickness and cattle trypanosomiasis, others as destroyers of native crops and competitors with native cattle. To deal with the first difficulty we need more knowledge of the behaviour of tsetse-flies or the parasites which they transit—knowledge of the type which Dr. Duke is amassing at Entebbe; and we also need field experiments, like that of Mr. Swynnerton in Tanganyika, to see whether game in a fly-free country can be kept from migrating to infested areas by game-proof fences. As regards the second point, we need the most careful studies of the food habits and migrations of game (the Uganda Game Department is beginning to set a standard in its dealings with elephants, with its data on the size and movements of every herd in the country) and of their periods of abundance or decrease, which seem to run in cycles of about 30 years.

It is primarily on biology that the future of Africa depends; and the same is true of the rest of our tropical possessions.

Scholarship Schemes.

What are we doing about it? The answer is, a good deal, but not enough. And the reason we are not doing enough is not in this case the much-abused Government, but the lack of men qualified to do what needs doing. When I was in Africa I was asked if I could recommend anyone for an absolutely first-class research post just fallen vacant. I did my best, and so doubtless have many others, but after eight months that post is still vacant. If it had been in chemical or physical or medical work, it would have been filled in a few weeks. That is symptomatic. There is a shortage of biologists of all kinds, and an intense shortage of biologists of the first class. People seem so ignorant of the openings available for biological trained men in the Colonial Service that it is worth while giving some figures. In each year from 1924 to 1928 over 60 new appointments were made of men with some biological training, and the numbers were increasing at the close. This is, of course, quite independent of the demand from the Dominions and the Sudan, and takes no account of biologists in the medical service. The chief demands are for agriculturists, foresters, and veterinary officers. To secure a supply of these men the Government has initiated various scholarship schemes, which again seem to be little known. About 50 of these are now given every year in agriculture, veterinary science, and related subjects like entomology and mycology, usually for two years at £250 a year; and the number of those awarded has been increasing steadily since the inception of the scheme in 1925.

These are bare figures, but the background of them is worth remembering. The agricultural or veterinary officer in Africa has not the same restricted scope as at home. If he is engaged on research, the problems that open out before him are so varied, so untouched, and so numerous that he has much greater chance of arriving at results of striking practical importance. Should he, beyond his work, make a hobby of some branch of botany or zoology, he has unlimited opportunities for indulging his taste for pure science. If he is on field work, he will be thrown in contact with the natives, and every quality of insight and leadership which he possesses will be called into play. This is, perhaps, most especially true of veterinary work. To be a good veterinary officer in Africa you must be a first-class biologist, and you must be a knowledgable and sympathetic anthropologist as well.

In Parliament.

The following questions and answers have been recorded in the House of Commons recently :—

Distemper (Dogs, Experiments).

Mr. Freeman asked the Home Secretary whether, in view of the suffering caused, he proposes to issue further licences to the experimental station at Mill Hill for the purpose of experiments with a view to preventing distemper in dogs?

Mr. Clynes: So far as I am aware, there is no likelihood that additional licences will be asked for for this work. But if the suggestion is that the renewal of the existing licences should be refused, I can only say that in view of the benefit to the animals susceptible to distemper—particularly dogs—which has resulted from these experiments, I should not be justified in interfering with further research on the subject, especially as no appreciable suffering has been caused.

Calves, Government Lymph Establishment.

Mr. Freeman asked the Minister of Health whether, in view of the pain caused, he will arrange for an anæsthetic to be administered to the calves used at the Hendon Vaccine Institute for the production of glycerinated calf lymph during the process of extracting the lymph from the vesicles raised on the body of the calf?

Mr. Greenwood: My hon. Friend's suggestion has been previously considered, but was not adopted as the administration of an anæsthetic to a calf is associated with some distress to the animal. The present procedure, which has been in operation for more than 30 years with satisfactory results, is not attended by evidence of undue suffering to the animals, and I see no ground, therefore, for the modification of practice suggested.

Mr. Freeman asked the Minister of Health how many calves were used at the Government station at Hendon for the production of lymph for vaccination during each of the last three years; whether the method employed in the production of lymph was substantially similar to that described in the Government Report on Glycerinated Calf Lymph issued in 1897; and how many of the animals used, if any, were under the influence of an anæsthetic while the lymph was extracted?

Mr. Greenwood: The number of calves used at the Government lymph establishment for the production of vaccine lymph was 418 in 1927, 438 in 1928, and 278 in 1929. The answer to the second part of the question is "Yes," and to the last part "None."

Vaccination.

Mr. Freeman asked the Minister of Health whether, in view of the continued occurrence of deaths from post-vaccinal encephalitis after the use of Government lymph extracted from the vesicles of rabbits, he will consider the desirability of dispensing with the use of these animals in connection with the preparation of the Government lymph supplies?

Mr. Greenwood: This question has been fully considered, but as I am advised that there is no evidence that post-vaccinal encephalitis is attributable to the use of rabbits in connection with the preparation of lymph, I do not consider that any change in the present practice of the Government lymph establishment is necessary.

Mr. Freeman asked the Minister of Health what happens to the calves after the lymph has been extracted from the vesicles raised for the purpose of securing vaccine, and how the carcasses of the animals are disposed of?

Mr. Greenwood: After the production of lymph, the calves used at the Government lymph establishment are killed and examined by a veterinary expert. The carcasses are at the disposal of the person who supplied the calves, and those sold for food are subject to further examination by officers of the local sanitary authorities.

Mr. Freeman: Are these carcasses eventually found to be fit for human consumption?

Mr. Greenwood: Certainly; if they were not, they would not be sold and exposed for public sale.

Imported Mutton (Caseous Lymphadenitis.)

Mr. Thorne asked the Minister of Health the number of carcasses of mutton imported from South American countries and landed at the ports of London, Liverpool and Southhampton for the months of September, October and November; and what percentage were found to be suffering from caseous lymphadenitis on examination at each of the ports?

Mr. Greenwood: I am obtaining this information, and will communicate it to my hon. Friend as soon as possible.

Mr. Thorne asked the Minister of Health if he is aware that considerable quantities of imported mutton and lamb from the Argentine Republic and Chili are infected with caseous lymphadenitis and are escaping inspection at the ports and reaching butchers' shops, and that in order to evade inspection quantities of legs, shoulders, sides, saddles and other parts, cut from diseased carcasses, are being imported; and if he will take steps to prohibit the importation of mutton from these countries other than in carcass, and order a more rigid examination of all imports and insist that the work of cutting the glands is carried out by skilled butchers?

Mr. Greenwood: I am aware that caseous lymphadenitis is found in a certain proportion of carcasses of mutton and lamb imported from the countries referred to. The normal practice is to make a preliminary examination at the port of 10 per cent. of each consignment of whole carcasses, and to examine the remaining 90 per cent. either at the port or elsewhere if the result of the preliminary examination shows this to be desirable. I do not think it necessary to recommend any modification of this practice.

At a conference recently held between medical officers of the ports principally concerned and officers of my Department, it was decided that imports of mutton and lamb from South American countries should receive special attention, and that severed parts of carcasses should in all cases be given complete examination. I am considering whether any further conditions should be laid down in connection with the importation of severed parts of carcasses. I understand that the work of cutting the glands is at all ports entrusted to persons who have experience of the work, and I do not think it necessary to make any special recommendation on this point.

Mr. A. M. Samuel: Is it right that this diseased meat should get into people's hands at all?

Mr. Greenwood: I never said that diseased meat got into people's hands.

Mr. Kinley: Will the right hon. Gentleman bear in mind the fact that at certain ports it has been a practice of the inspectors to inspect only a very small percentage of this meat, and that that percentage has been previously selected by other people?

Mr. Greenwood: If the hon. Member can give me cases like that, I shall be very glad to have them, but we try to get a fair sample of 10 per cent.

Mr. Matters: Is this disease found also in mutton and lamb from other parts of the world?

Mr. Greenwood: Yes, all the imported mutton and lamb is examined, but the trouble at the moment is particularly in the imports from South American countries.

Lieut.-Colonel Heneage: Does not the right hon. Gentleman think that the best solution is to buy British mutton?

Swine Fever Order (Stowmarket).

Mr. Granville asked the Minister of Argiculture if it is intended to maintain in operation the Suffolk Swine Fever Infected Area Order of 1930 in the Stowmarket area?

Dr. Addison: The Suffolk Swine Fever Infected Area Order of 1930 was designed not only to control an outbreak of swine fever within the area, but to prevent infected pigs leaving that area for the surrounding counties. Although the number of outbreaks is declining the disease position within the county does not yet warrant the withdrawal of the Order.

Bovine Tuberculosis (Spahlinger Vaccine).

Captain P. Macdonald asked the Minister of Agriculture whether any steps are being taken by his Department to make the new Spahlinger anti-tubercle bovine vaccine available at the cheapest possible price to British farmers?

Dr. Addison: I would refer the hon. and gallant Member to the reply I gave on Monday to a question by the hon. Member for Devizes (Mr. Hurd) of which I am sending him a copy.

Lieut.-Colonel Freemantle: Will the right. hon. Gentleman take no steps to put at the disposal of farmers a product the results of which are so uncertain until its value has been proved?

Mr. Hardie: As this is an imported product, will any tax be placed upon it in the interests of Protection?

Dr. Addison: I can assure the hon. and gallant Member that I shall not do what he anticipates, and, if he examines the reply which I gave on Monday, he will see everything fully set out there.

Slaughter of Animals (Mechanical Killer).

Mr. Freeman asked the Minister of Health the number of local authorities that have adopted the use of the humane killer for pigs; and if he has any figures showing the number of pigs killed by that means in 1929 and 1930?

Mr. Greenwood: The number of local authorities with a by-law requiring the use of a mechanical stunning instrument for pigs is 368, but I have no information of the number of pigs to which it has been applied.

Duchess of Atholl asked the Minister of Agriculture whether, having regard to the number of British horses exported to Vaugirard for butchery purposes, he is satisfied that all horses slaughtered there are killed by means of the humane killer; that pending slaughter sufficient food, water, and bedding are provided for them; and that they are humanely treated generally?

Dr. Addison: I am satisfied that all horses which have been exported from this country for the purpose of immediate slaughter at the abattoir at Vaugirard, since the trade was resumed in April last, have been slaughtered by means of the mechanical killer. Some of these animals were slaughtered at the abattoir in the presence of one of the Ministry's senior veterinary officers, who reported that they were adequately fed, watered and bedded. The same officer reported that the stabling accommodation at the abattoir, which is in charge of veterinary inspectors acting under the control of the Prefecture of Police, is satisfactory, and that there was no reason to believe that the horses are not fed and watered as required by the regulations applying to abattoirs in the city of Paris.

British Army (Mechanisation).

Major Harvey asked the Secretary of State for War if he proposes to transform any cavalry regiments into armoured-car or other non-horsed formations during the coming year?

The Financial Secretary to the War Office (Mr. Sanders): The question whether funds will be available for this purpose falls to be considered with next year's Army Estimates, and I regret that I am unable to anticipate the decision.

Major Harvey: Does this question depend entirely upon funds, or are there any other considerations?

Mr. Sanders: There are certainly other considerations, but perhaps the hon. Member will recollect that the Secretary of State for War made a declaration with regard to policy, in which he pointed out that mechanisation should not be proceeded with on too large a scale because of the constant changes and improvements in the methods that had to be adopted in connection with it. That is on the whole the chief consideration which is taken into account by the War Office, but naturally finance plays a considerable part in the extent to which mechanisation proceeds.

Stallions (Inspection).

Lieut.-Colonel Heneage asked the Minister of Agriculture how many inspectors of stallions there are in Great Britain; how many in Lincolnshire; and what are the qualifications for the post?

The Minister of Agriculture (Dr. Addison): Fifty-eight fully qualified Veterinary Surgeons, of whom two reside in Lincolnshire, are employed on a fee basis by the